DOCUMENT RESUME

ED 340 420 JC 920 026

AUTHOR Tenore, Elizabeth J.; Dunbar, Shirley E.
TITLE One Step Beyond: A Systems Approach to Delivering Individualized Instruction. A Handbook for the Tenore Plan.
PUB DATE 79
NOTE 139p.; Published by Berkshire Community Press, Inc., Pittsfield, MA.
PUB TYPE Guides - Classroom Use - Teaching Guides (For Teacher) (052) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Community Colleges; Educational Innovation; English Instruction; *Individualized Instruction; *Instructional Systems; Learning Laboratories; Mathematics Instruction; Models; *Program Development; Remedial Instruction; *Systems Approach; Two Year Colleges
IDENTIFIERS Bunker Hill Community College MA; *Tenore Plan MA

ABSTRACT

At Bunker Hill Community College (BHCC) in Massachusetts, the Learning Center is the heart of the college's instructional program. The Center houses programs for credit at all academic levels, including some classroom work for 40% of the faculty. The Center is a delivery system for individualized, personalized curriculum at both remedial and college levels based on mastery-learning concepts. Designed to assist other colleges in developing a learning center based on the BHCC model, this handbook considers the history, theoretical underpinnings, and methods of the Center and offers guidance for program replication. The handbook's 10 chapters cover: (1) the background and history of the Center; (2) the various learning theories in which Center activities are grounded, including reinforcement theory, self-paced, modular instruction, a systems approach, and Bloom's taxonomy of learning objectives, and theories about learning and cognitive styles; (3) the Center's delivery system for individualized, personalized instruction, which includes diagnosis of entry-level behavior and ability, careful prescriptions of learning sequences which start where the student is and are sequenced to his/her final educational goal, and identification of each student's preferred learning style; (4) individualizing English instruction for inner-city students with poor academic preparation; (5) using simulation games, such as SIMSOC (which allows students to set up and control their own society), as the core of a growing curriculum for nontraditional learners; (6) integrating mathematics; (7) beginning a center; (8) getting the faculty involved; and (9) marketing adult education through the use of individualized instruction. (JMC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED340420

one step beyond

a systems approach to delivering individualized instruction

a handbook for the Tenore plan
by Elizabeth J. Tenore
& Shirley E. Dunbar

JC 920 026

ONE STEP BEYOND

A Systems Approach to Delivering
Individualized Instruction
A Handbook for the Tenore Plan

by
Elizabeth J. Tenore
and
Shirley E. Dunbar

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

E. J. Tenore

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☒ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

ACKNOWLEDGEMENTS

Special thanks to the following individuals of the Graphics and Visual Communications Department of Bunker Hill Community College:

Cover Design

Ronald Scott Williams '77
Regional New England winner of the
1977 Time-Life Award for Graphic Art

Renderings for
"Dale's Cone of Experience":

Allen Anderson '77

Department Chairperson

Professor Christine Conley

© 1979 Berkshire Community Press, Inc.
Pittsfield, Massachusetts

All rights reserved. No part of this book may be reproduced in any form or by any means without written permission from the publisher.

We dedicate this book to those people without whose help the Center for Learning and Teaching at Bunker Hill Community College would not have been possible. They are Janice Bonanno, JoAnn Pilczak, and Lawrence Souza. Also, we wish to express our gratitude to our first mentors, Doris Riel-Peterson and Esther J. Tenore.

CONTENTS

Preface i

Collaborator's Note iii

Introduction 1

Chapter I 12
Background And History

Chapter II 18
Learning Theory That Lends Itself
To Individualized Instruction

Chapter III 34
A Delivery System For Individualized,
Personalized Instruction

Chapter IV 44
How To Get From "We Is" To "We Are"

Chapter V 69
Using Simulations As The Core Around
Which A Community College Is Built

Chapter VI 83
Integrating Mathematics

Chapter VII 94
Beginning Your Own Center

Chapter VIII 109
Getting The Faculty Involved

Chapter IX 113
Marketing Adult Education Through The
Use Of Individualized Instruction

Chapter X 123
Conclusion

Selected References 126

CONTRIBUTORS

R. Brent Bonah
Dean, Division of Continuing Education
Bunker Hill Community College

Jan Bonanno
Coordinator of the Learning Center
Bunker Hill Community College

Ann Kelleher
Director of International Education Program
Bunker Hill Community College

Joan McGowan
Division Chairperson
Bunker Hill Community College

Dorothy Ryan
Chairperson, Department of Mathematics
Bunker Hill Community College

PREFACE

Bunker Hill Community College opened its doors to students for the first time in the Fall of 1973. Prior to that opening, I spent considerable time visiting the communities and institutions in the area the college was scheduled to serve. It soon became apparent to me that this new institution would be facing a difficult period. The City school system and some of the communities were in a turmoil because of court-ordered busing. Students were dropping out of high schools and tensions were running high between communities. We were faced with the task of creating an educational climate and programs that would help to alleviate these problems.

We soon learned that we would face special problems because the range of academic abilities, the difference in secondary preparation, the high percentages of our students with poor academic backgrounds and with limited financial resources, and the economic stability of the families in our service area would be similar to those found in other urban community colleges.

As I thought about these problems and as I discussed the situation with others, I began to develop a philosophy for the institution and an approach that eventually led to individualized instruction with some self-pacing within a classroom setting. The concept grew out of a felt need to eliminate massive group remedial programs which are rarely successful, to provide a rewarding experience for every student, and to provide a program flexible enough to meet the academic needs of those diverse individuals coming from an inner-city. Once our course was charted, we began to look for faculty and staff who either had experience in this approach or who, at least, had an open mind and would be willing to work with us in creating a non-traditional approach to learning.

From the beginning, the college asked the faculty to prepare their materials in a modularized form. The faculty were asked to work with our Learning Center, which is now the heart of our program. The fact that our Learning Center (which should probably be called a teaching center) houses programs that deal with programs for credit at all academic levels, has assured the college community that there is no stigma attached to attending the Learning Center. Approximately 10% of our faculty now house some of their classroom work in the Center. Because we have provided

a flexible time schedule, individual students can progress at a rate that will assure them of a successful academic experience.

Professor Betty Tenore is the individual who has taken this concept and designed a Learning-Teaching Center to meet the great variety of needs of the students at this institution. Her ability to take our philosophy and concept from the drawing board to implementation has resulted in the development of an outstanding learning-teaching center.

Harold E. Shively, President
Bunker Hill Community College
December, 1978

COLLABORATOR'S NOTE

Although I am not truly a part of this story from its beginning, I have been close to it for the last four years.

As I proceeded through college and on to graduate school, accumulating degrees in English and Community College education, I met a number of educators (visionaries, I like to call them), who for one reason or another saw fit to listen to my ideas, and saw to it that I grew both as a student and as an educator.

Among these visionaries, and perhaps the person who has most influenced my thinking in the past four years is Professor Elizabeth Tenore, Director of the Center for Learning at Bunker Hill Community College in Charlestown, Massachusetts. It is from Professor Tenore that this book originates.

Collaboration and brainstorming with Betty began to take on weekly, then daily sessions. As we gathered ideas and materials and began to make adjustments and changes to allow for English program integration, it became more and more apparent that the work we were doing must somehow be documented.

Routinely, visitors began to come to the Center for instruction, ideas, and general knowledge. They came from everywhere. The reputation of the Center, and President Harold Shively, were becoming widely recognized and accepted as a valid way to approach the educational process. We began to see in print the ideas that other educators took away with them. Many times the Center and its philosophy were misrepresented or incorrectly interpreted. We knew, of course, that it was easy to not understand all that was going on in the Center, and it became apparent that the time had come to publish information that was accurate.

When Betty first asked me if I would co-author a book about the Center I was reluctant and argued, to no avail, that the Center was and is her idea and that it is she alone who should author the book. Although I believed this then and still do, I also knew from working with her for four years that unless she had help with the project, the book might never get written. So I agreed to spend time writing while she created and implemented new ideas.

My task was to sit in her office several times a week and glean from her the numerous facts and details that I still did not know or understand. These sessions were taped for my reference. I would

then make several drafts of a chapter before we proceeded to the next. Friends and colleagues of ours would read the book in progress and give us feedback and advice for changes and adjustments.

Although I couldn't possibly write fast enough to satisfy everyone, I found myself putting in longer hours than planned.

We decided in the early stages that the book must be presented in a very simple and straightforward manner. It must be easily understood by practitioners and administrators alike, and the reader should be able to replicate, if he desires, the methods and practices we have established for using a systems approach to education.

As for acknowledgements, we are indebted to scores of educators and students who have generously donated ideas, criticisms, and commentary about this work. But we are particularly indebted to President Harold Shively for initially having the vision to incorporate such an innovative idea into an entire college structure and for having the courage and insight to administratively support this decision, and those who chose to follow our direction.

Shirley Dunbar, Communications Department
December, 1978

INTRODUCTION

Introductions can take many forms. We thought an interesting introduction to this handbook might take the form of an eclectic view from a few notable educators and philosophers. We hope you enjoy the format. In either case it more or less expresses our philosophical views about education and the constant need for adaptation and change in its structure.

STATION MANAGER:

Good evening. We are fortunate in having a distinguished gathering here in the main studio of station WEJT-TV. Proper introduction of our panel members would require more time and more eloquence than is available in this person. So, let us start with Confucius, China's immortal sage. You, sir, are a practical man, more concerned with morality than with man's spiritual state. Education is your method of preserving society. Essentially, you represent a humanist attitude. Known to us mostly through your writing and those of your disciples, we appreciate both your wisdom and the charm of your genial humor.

To your right is a man who has long been a rich source of educational thought. Devoted to the idea of a liberal education aimed at personal improvement, we still find his ideas defending the liberal arts curriculum. Teacher, Scientist, Philosopher, we welcome you, Aristotle.

Our next guest, Erasmus of Rotterdam, is described by Albert Hyma as a forerunner of modern liberal Christianity who led the fight against the intellectual domination of the Church. He has been justly termed an "intellectual titan of the Renaissance" by John P. Dolan, who says, "Few, if any, great minds have enjoyed fame in their lifetime, and even fewer have been understood. Yet it is the unique distinction of Erasmus that his genius radiated a brilliance even during his lifetime that has seldom been equaled." (Dolan, 1961. p.8).

It has been said that "Erasmus laid the egg that Luther hatched." (Easton, 1962, p.81). If the Renaissance was basically concerned with learning and its revival and freedom, the Reformation was a religious movement and its leading figure, Martin Luther, was a religious reformer. He saw reform through mass education - - - and we are wiser for his work.

Today's arguments for progressive education echo Montaigne's ideas. He believed that education should aim at teaching to observe and he carefully differentiated between education and knowledge. His ideas on education appear scattered through his *Essays*. Termed a social realist by some and a utilitarian pragmatist by others, he viewed education as direct preparation for life - - - a learning-by-doing concept.

An educational counter - movement in the struggle between the Roman Catholic Church and Protestanism produced the Society of Jesus, whose founder, Ignatius of Loyola, will join us later. A 30 year old soldier when he was converted, Loyola went to school with the children to learn ordinary subjects. From this humble beginning he produced powerful, educational weapons of the Catholic Church known to us as the Jesuits.

Finally, leading the discussion, is Gilbert Highet. Professor Highet, an eminent scholar and critic, is Anthon Professor of the Latin Language and Literature at Columbia University. Thank you for coming tonight.

It is only recently that I have given any attention to education although I have lived among its products and have never hesitated to criticize it or its representatives! Once attuned to the subject, it appears that there are great numbers of people who are concerned with issues and problems in education. As a matter of fact, there are so many issues that the neophyte finds himself in a constant state of flux. Our scapegoating world finds it easy to finger education for much of its ills, and such an opinionated approach hardly offers solutions to our problems or clarification to these vital issues. We have a tiger by the tail, for such approaches are the result of our own educational processes. Too often, our educational system is the thinking man's filter. So you see, with no real knowledge, I'm criticizing again and thus I fall into my own trap.

Regardless, it appears to me that at the heart of the matter are teachers and their students, for the educational systems are the product of the people; the people are the products of the educational systems. In some way, each of you has put your stamp on a part of our educational evolution. In the business world, tonight's session is called "brainstorming" and its favorite catch-phrase is "let's kick it around." Professor Highet?

HIGHET:

"I believe that teaching is an art .... a 'scientific' relationship between human beings is bound to be inadequate and perhaps distorted. Teaching involves emotions ... and human values,which are quite outside the grasp of science." (Highet, 1950, preface). "Paideia in Greek means education; but it also means civilization... culture, in the highest sense. This is because the Greeks believed that all civilization and all progress were based upon...lifelong education ...Their greatest men pursued and maintained...the improvement of the mind. It was in order to help men think that their great poets composed, philosophers and historians wrote, their orators spoke. They were teachers...Plato, Aristotle....doctors of the soul. We read them not because they are 'historic', but because they make us think." (Highet, 1963, p.18). "Aristotle is probably the best and broadest single mind the human species has yet produced. The best proof of Plato's genius as a teacher is that Aristotle worked with him for 20 years and then founded a mighty school of his own based partly upon his criticisms and refutations of Platonic doctrine...." (Highet, 1950, p. 161-88)

ARISTOTLE:

"Though both truth and Plato are dear to me, it is right to prefer truth." (Highet, 1950, p.188). "All people do not agree in those things they would have a child learn...from the present mode of education we cannot determine with certainty to which men incline, whether to instruct a child in what will be useful to him in life, or what tends tô virtue, or what is excellent; for all of these things have their separate defenders." (Crowe, 1954, p.73-111). "Plato said: 'the beginning is the chiefest part of any work, especially in a young and tender thing, for that is the time at which the character is being formed and most readily recieves the desired impressions.'" (Plato, 1911, (tr.), p.92). "The human being is a social or political animal and all his tendencies and capacities cannot develop and come to maturity except in a social setting." (Crowe, 1964, p.227). "The citizen must be educated in the spirit of the constitution under which he lives. There should be legislation about education and it should be conducted on a public system. But consideration must be given to what constitutes education and what is the proper way to be educated... The young must be taught those useful arts that are indispensably necessary...(but) a task...must be deemed vulgar if it renders the

the body or soul or mind of free men useless for the employments and the actions of virtue." (McKeon, 1941, p.68). "To know does little or even nothing, for virtue." (McKeon, 1941, p.187).

ERASMUS:

"What city ever accepted the laws of Aristotle and Plato or the doctrines of Socrates?"(Erasmus, 1941,(tr.) p.117). "In an ordinary town-house of well-to-do people the day begins with...the lightest of 'literature' and gossip...formal attendance at public worship follows, for the sake of seeing and being seen. Then more gossip, promenades and games, sadly lacking in decorum...How different is such an environment...from that careful supervision which Aristotle commends." (Woodward, 1956, p.22-151). "The ancients drew the idea of the wise man and of the orator - - - types never realized in fact. So it is easier to outline the ideal schoolmaster than to find him in reality... It is a duty incumbent on statesmen to provide that there be a due supply...qualified to educate the youth of the nation. It is a public obligation in no way inferior to the ordering of the army. What shall we then say of the type of school too common at the present time? A (youth) scarce four years old is sent to a master about whose qualifications for the work no one knows anything. Anyone is good enough to put over the grammar school in popular opinion... The school is, in effect, a torture chamber...Then it is wondered that the growing (child) hates learning; and that in riper years he hates it still. (Neither) can I advise parents to send their (children) to schools in monasteries. The monks make a good income out of their schools which are conducted no one knows how. (Parents) seem content to know nothing about the (teacher) who has charge of a...precious possession. Or, a father grudges the pay of a decent tutor...Yet the same niggard will spend a fortune upon banquets, wine and play...It is not only a question of the boy himself, but of his parents, his house, nay, of the commonwealth itself to which he will belong. They err, therefore, who affirm that wisdom is won by handling affairs and by contact with life." (Woodward, 1956, p.191; 193-4; 204-5; 209-15).

MONTAIGNE:

"...the greatest and most important difficulty of human effort is the training and education of children...for want of a ready foresight of the natural propensity of the mind, much time is wasted in

trying to teach children those things for which, by their natural constitution, they are totally unfit...Upon choice of tutor...I would recommend for having a well-made rather than a well-filled head. Yet both are desirable and I would prefer wisdom, judgment, civil manners, and modest behavior to bare and more literal learning. I would have the tutor make the child examine and thoroughly sift all things...He must imbibe knowledge but not dogmas; when he knows how to apply, he may at once forget when or whence he had his learning. Study should make us wiser. It is understanding that sees, hears, that moves, sways, and rules all. What a man knows directly, that will he dispose of without turning to the book or looking to his pattern. A mere bookish knowledge is useless. It may embellish actions, but it is not a foundation for them...The society of men, the visiting of foreign countries, observing people and strange customs, are very necessary....that he may whet and sharpen his wits by rubbing them upon those of others...It is not the mind, it is not the body we are training but the man....In acquaintance of man ...he should give attention to those who live in the records of history ...the worthiest minds of the best ages...Read history as a discipline of the judgment." (Montaigne, 1958, (tr.), p.20). "Had anyone formerly brought me to Erasmus, I should hardly have believed but that all was adage and apothegm he spoke to his man or his hostess; we fancy that they (historical figures) will not abase themselves so much as to live...They are therefore to be judged by their settled state...in their native station...(thereby)...human understanding is marvelously enlightened...By this method of instruction my young pupil will be much better employed than those who are at college... The strict government of our colleges has always displeased me." (Montaigne, 1958, (tr.) p.162).

HIGHET:

"Well true, Monsieur, your *Essays* are the by-product of (your) own self-education...roadmaps of (your) own explorations...But the most valuable thing for us to see is how a very carefully planned, varied and stimulating education, applied to a French boy who was nothing out of the ordinary, equipped him to continue the enlargement and refinement of his mind throughout his life. The best kind of education is that in which the young are taught something they continue to use and to learn and to appreciate all through their

BEST COPY AVAILABLE

lives...(but we must also consider that) the Jesuits...worked out... one of the most successful educational techniques the Western World has seen...The best proof of the educational genius of the Jesuits is that many of their best pupils were not Jesuits...The best thing about its methods was the thoroughness with which they were planned. The Jesuit regulations made sure that the pupils realized what they were doing and why. Planning and adaptability were two of the pillars of Jesuit education. The Company of Jesus has many enemies, but none of them has ever said that it did not know how to teach..." (Highet, 1950, p.131; 190; 195-6). (Here is St. Ignatius and the *Ratio Studiorum* now - - - perhaps they will enlighten us as to some of the contents?)

LOYOLA:

"...one of the principal functions of our society is to transmit to those about us all of the schooling consistent with our Institute in such a way that they may be brought to a knowledge and love for our Creator and Redeemer...The special duty of a teacher shall be to move his hearers...to a love of God...of virtue...and to pursue all their studies to that end...His duties are to explain sacred literature piously, learnedly and seriously, according to the true and literal meaning, in order to strengthen true faith in God and the establishment of sound morals...He shall realize that it is his duty to join a well-founded subtlety in disputation with an orthodox faith and devotion in such a way that the former shall especially serve the latter...Since the arts and the natural sciences prepare the mind for theology and help to perfect knowledge and use of it and of themselves aid in reaching this end, the instructor...shall so treat them as to prepare hearers for theology...Let him not depart from Aristotle ...doctrines which academies everywhere approve of...the principal heads of moral science which are had in the ten books of ethics of Aristotle...All members of the Order shall follow the teachings of St. Thomas in Scholastic theology... and center their efforts in him so that their pupils may esteem him as highly as possible...If a teacher happens on a passage over which there is controversy between us and the heretics, he should explain the passage earnestly and carefully...only insofar as it pertains to the question at hand... mindful of the position to teach nothing but the sacred Scripture." (Painter, 1905, p.118). "They will use the classics as hooks to catch souls." (Highet, 1950, p.195).

LUTHER:

"The hollow piety and selfish aims of such persons are sufficiently evident from their own confession...It is no wonder that the devil meddles in the matter...How could he consent to a proper training of the young? He went to work and spread his nets, established such monasteries, schools and orders that it is not possible for a boy to escape him...If we must annually expend large sums on muskets, roads, bridges, dams and the like...should we not apply as much to our poor neglected youth? I should prefer, it is true, that our youth be ignorant and dumb rather than that the universities and convents should remain as the only sources of instruction open to them." (Ulich, 1951, p.61). "Reform the universities where there is too much Aristotle and too little Christ. Alas, men give gulden for the war against the Turks, but do not see that they should give a hundred times as much to make their children Christians...give for schools, where boys now may learn more in three years than as heretofore in forty...There is no greater sin against God than not to teach the children...Though there were neither soul, nor Heaven, nor Hell, the government requires the education of boys and girls, in order that excellent and capable (people) may govern the land... In fine, educated people are needed for worldly as well as spiritual functions How I regret that I did not read more poetry and history, and that no one taught me in these branches. Instead of these I was obliged with great cost, labor and injury to read Satanic filth, the Aristotelian and Scholastic philosophy." (Ulich, 1951, p.81).

ERASMUS:

"Whenever Lutheranism reigns, there is an end to letters. Yet these men have been nourished and helped by letters."(Taylor, 1962, p.60).

LUTHER:

"Day by day my estimation of him lessens...Human considerations outweigh the divine with him." (Taylor, 1962, p.115).

ERASMUS:

(You) "have nothing (to) bring against me except that I would not profess at the peril of my head, what either I did not accept, held as doubtful, or disapproved...who has written more against these (church corruption)?...These and much besides, I have taught according to the measure of grace given me...Whatever Luther has taught he has drawn from my writings!" (Taylor, 1962, p.161-2).

BEST COPY AVAILABLE

LUTHER:

"Erasmus, who does not go beyond the light of nature, may like Moses die in the plains of Moab without entering into the promised land of those higher studies which pertain to piety."(Bainton, 1962, p.197-8).

CONFUCIUS:

"When one is upset by anger, then the heart is not in its right place; when one is disturbed by fear, then the heart is not in its right place; when one is blinded by love, then the heart is not in its right place; when one is involved in worries and anxieties, then the heart is not in its right place. When the heart isn't there, we look but do not see, listen but do not hear and eat but do not know the flavor of food.

Broaden your knowledge with learning, and then control your conduct with religion. If one wishes to transform people and to perfect their manners and customs, must he not start from the lessons of the school? The jade uncut will not form a vessel for use; and if men do not learn, they do not know the way in which they should go. The thoughts from first to last should be fixed on learning. Teaching and learning help each other. Teaching is the half of learning. When a superior man knows the causes which make instruction successful, and those which make of it no effect, he can become a teacher of others. Thus in teaching, he leads and does not drag; he strengthens and does not discourage, he opens the way but does not lead to the end without the learner's own efforts. Leading and not dragging produces harmony. Strengthening and not discouraging makes attainment easy. Opening the way and not conducting to the end makes the learner thoughtful. He who produces such harmony, easy attainment, and thoughtfulness may be pronounced a skilled teacher. See what a man does. Mark his motives. Examine in what things he rests. How can a man conceal his character! If a man keeps cherishing his old knowledge so as continually to be acquiring new, he may be a teacher of others. Isn't it a great pleasure to learn and relearn again? One who goes over what he has already learned and gains some new understanding from it is worthy to be a teacher." (Yutang, 1938, p.102-3).

STATION MANAGER:

They've all gone!

HIGHET:

It's late and they've slipped away.

STATION MANAGER:

But you're still here.

HIGHET:

I started to go but there are questions.

STATION MANAGER:

There are always questions. I rather wonder what we accomplished in this session? Their thoughts are certainly interesting and we can point to this or that in each as having a meaning for today, or a use for today, or a corollary in our systems. What is more interesting is that they show so many facets. They are individuals, with strengths and weaknesses, brilliance and blind spots. I do dearly love the way Luther throws his inkpots at the devil. I suppose that I am trying to say that these are "only" men. Actually, I don't think that they ever thought of themselves as anything more. Do they represent any single quality to you?

HIGHET:

"Thinking, learning, remembering, knowing; imagining and creating new ideas; preserving and communicating knowledge over distance in time and space. Not only is it wonderful in its compass and variety; it is unique. It makes us human...The life of every individual man and woman is made up of many acts and passions... all human history - - - with all its multitudinous glories and disgraces and crimes and heroisms - - - might be best understood as a process of learning...man in his brief history has transformed the world and himself. His specific quality is purposeful change through thought. He is most truly alive when he thinks." (Highet, 1963, p.6).

STATION MANAGER:

OK, but certainly there are different qualities of thinking. How do the great thinkers arise and more important, how do we upgrade thought?

HIGHET:

"...we can never tell how great minds arise...but we do know methods of feeding them as they grow...(one) is to bring them into contact with other eminent minds...He or she must meet men and women of real and undeniable distinction. That is, he must meet the immortals...The best way towards greatness is to mix with the great." (Highet, 1963, p.40-41).

BEST COPY AVAILABLE

STATION MANAGER:

Remember what John Gardner says...that we must find a way to treat both our plumbers and our philosophers or neither our pipes nor our theories will hold water. (Gardner, 1961, p.218). You're not suggesting that schools exist only to train geniuses?

HIGHET:

"No, but they do not exist only to train the average and to neglect or benumb the talented. They exist to make the best of both." (Highet, 1963, p.41)

"Education in America is an inspiriting achievement: all those light, healthy schools, those myriad colleges, so many youngsters having a fine time and not working too hard. Yet it has a couple of weaknesses. One is that education has become almost too easy to get ...no one expects to get stimulus or nourishment from it. The other is that it does not carry over into mature life. Why should this be so, I cannot tell. It must be something wrong with education." (Highet, 1963, p.42).

STATION MANAGER:

This leads me back to where I started, except that now there is some small measure of knowledge about the subject.

All these people have been active in education, yet there was so much less knowledge available to them than is available to us today. Certainly much of this knowledge is double-edged: it aids our progress and it threatens our existence. For some time, minds have worked on this problem. C. P. Snow argues from the political viewpoint that science must be controlled; Dr. Joseph Still looks at the problem through the scientist's eyes and says that science must play a more dynamic role in foreign policy; Dr. Conant approaches as an educator to ask for understanding through knowledge. Let me read you something that Conant has written:

"In 1837, no fossil remains of man had been discovered; stone implements and other evidences of a long childhood of the human race had not been uncovered...All that is implied by the word 'evolution' was unsuspected by scholars of Emerson's generation... The labors of biologists, archeologists, and anthropologists have converged to give us a picture of our ancestry that no one dreamed of in 1837." (Conant, 1961, p.511).

This certainly does not imply that education can now discount everything prior to 1837. It means that we use it creatively because we now have available to us a better understanding of mankind. The world of scholarship must cause the interaction of these two modes of thought, the natural scientists and those concerned with human problems.

Dr. Conant, like Erasmus, calls for the emergence of a "true community of scholars." Perhaps this is still too optimistic considering the state of world ideology today. But a hard core of dedicated educators can start the operation:

"Mankind thinking about man as a part of nature for the benefit of all mankind, such is the scholar this and the next century demand." (Conant, 1961, p.549-50).

Was it Confucius who said, "A journey of a thousand miles starts with a single step?"

CHAPTER I

BACKGROUND AND HISTORY

Whenever you ask Betty Tenore how she got the idea to start a learning center that was not like the usual Learning Resource Centers that have popped up all over the United States, she will usually tell you that it just evolved out of all the little training centers that she developed in both education and industry over the past fifteen years.

Graduating with a bachelor's degree in psychology from Boston University at the height of the Eisenhower recession in 1953, she went immediately into industry because, as she puts it, "I had to work."

She was hired by a very old and very esteemed electronics company called General Radio, which at that time was located in Cambridge, Massachusetts. It was her initial training there in a Systems approach to manufacturing that began the long career that eventually led to similar applications in education.

In the beginning, General Radio wanted to go from a hand operated, persons-hands-on system and begin to look ahead to develop a computer system for their company, especially in the area of management and manufacturing. This meant that they were actually going to begin to develop the hand operation into an organizational structure that could then go into computer operations. For most companies that is not a horrendous thing. They contract with people from IBM, develop a system, and fire everybody on the job.

But this company was different. The company had been established by a man from MIT who was really quite a humanist. In the days before employee benefits, this man had formed his company in a very humanistic program. The people and their jobs were very important to him. In an era when there were sweatshops and machine shops, General Radio was already a leader in cybernetics, if you will, the human approach to human being and machines. What he wanted to do, because he had good vision, was to look ahead to computer operations, but he did not want the machinery to run the people and overshadow them. He was looking for some management trainees, on a long term basis, to train to go into this operation, and then adapt the machinery to the people and system, rather than the people to the machinery. This was a very unusual approach. Usually the machines come in and tell everybody what they will be doing. He wanted it, not as a brainwashing project but as a business project so that when the change came employees would be in tune with what was happening and would not feel cut out, would know what was happening, would not feel threatened.

In order to do that he had to have people who knew a lot about the various areas. As Professor Tenore notes, the company was looking ahead to the point where knowledge about psychology and the way people behaved would be the factor that would be brought to the job, but they would "train" me in the System. I then spent one year in the office part of manufacturing, learning everyone's job.

Once that was done I was moved into the industrial engineering department. At that time they sent me to MIT where I had to take courses in how to wire diagrams and translate them into blueprints for entire pieces of electronic equipment, and then draft it out. From that process I learned from the beginning what happens when you get a set of drawings, let's say draftings, which is a model for new instruments.

After that I was sent to IBM, where I learned what machines could do. It was all punch cards then - this was 1954. At that point I was put back into the industrial engineering department where I would get a set of blueprints for drawings that they would call the "trial-run" of the new instrument. We would make ten models to work all the bugs out. At that point, because of the MIT training, I could take a blueprint, for let's say a new panel, that was going into one of the new electronics equipment, and do the whole set of drawings that would eventually work up to the entire instrument. It was this experience that allowed me to shape systems, organizational processes and administration processes.

A Systems approach in business is an orderly structure that is usually refined, and applied in certain definite steps for a desired outcome. If you want to compare this to education we would be concerned about the entering needs of a student. In industry we talked about the state of where we were, what was being made in production, what needed to be changed that was on the line, and what needed change critical enough to warrant re-design.

BEST COPY AVAILABLE

The last stage of my development was the entrance of the computer operation, and the system had to be adapted to fit with the computer. Having been in every department and knowing everyone's job, I then could go in and work with them to devise a system for the computer's use in their individual jobs. A system which left the employees with a sense of integrity, but at the same time computerized the system. We did that, and we did it quite well.

Twelve years later I decided to leave industry and return to graduate school at Northeastern School of Education, where I received a teaching fellowship to work on a special program for Jim Gilbert. Jim was a clinical psychologist who had been in naval intelligence during the Second World War and had become exposed through the military to programmed instruction. He had come out of that experience convinced that this should be applied to education. At Northeastern he was trying to develop a little system that would use programmed instruction in education. He was meeting with terrible resistance. Nobody was interested in it. It was something the military did for training. But I can remember the example which I often heard quoted in the past, to doubters of programmed instruction: "They send those guys down in submarines for tours of duty and all they have is a programmed manual on how to repair the submarine down there."

Jim had conceived some sort of a center which would incorporate this kind of operation and had all kinds of problems getting through the curriculum and faculty committees.

There were several of us in this Center. A man named Al Kent who had been in the jewelry business turned out to be a very fine instructional designer. At that time there was no place to learn this. You just learned it. We developed, a critical step, a Center for Programmed Instruction. It was just a little thing with all of those funny swiss cheese programmed texts. They were absolutely dreadful, but we tried to win souls.

A year later, after I had received my Master's degree, this noble group of colleagues decided that what I now needed most was to go out and teach, and for the next four or five years I taught psychology in one of Boston's North Shore private colleges. The pay was poor, and when Jim Gilbert called me and told me the Center that we started was in a mess and would I be interested in setting it straight, I came

back to Northeastern and became Director of the Center. It was still called the Center for Programmed Instruction, even though the technology was changing. So I went back and what I found was that they had staffed the Center with people from counseling backgrounds and what they were doing was shrinking heads and holding hands.

When I moved back into the old Center there were about twenty people. Their productivity was minimal, and their estimates of their productivity were somewhat less than honest. They would get fifty people enrolled, and they would say that those fifty people, enrolled for three hours, were working 150 hours per week. But if you went back and looked at the records those people could have withdrawn, dropped, weren't coming, were dissatisfied, or were not learning. It was not an accountable system. My industrial background had taught me the lesson that you did not do this but that you had to be able to assess your system, and assess it in a very hardnosed kind of way, in order to stay alive.

When I first got there that is what I began to do. I began to realize that the Center as it had been organized was not accountable. There wasn't anyone that could be retained, because the attitudes were too ingrown. Treir attitudes toward students were at best cavalier. We fired everybody and began to rebuild the System. We interviewed for weeks and finally got our own assistants and began to set up an accountable system for student interaction.

An important point about the Center at Northeastern was that at this time, in relationship to the general academic offerings, the Center was not allowed to award any credit. Everything we did was supplemental to what was going on at the University - generally in the nature of something to a required part of a course or a required activity, but not in the sense that the student got credit for what he did in the Center. I learned at that time that this is nonsense. If it's worth doing at all, it's worth doing for credit.

For example, if the Boston students had to do an algebra course before going into a physical education course, then they should get credit for it. If the graduate education people had to take a statistics course before they could enter research and design then they should be able to get statistics credit. And you began to see that even though it's high level stuff, the person who is putting in the time in relationship to something he has to do should get credit for what he is doing. It

is the same situation for the developmental math or English course If there is no credit there is no reward.

In the two years that I was back at Northeastern we got an accountable system. The first year it was the problem of getting more involvement, for example the nursing department and the allied sciences. Getting more programs into the Center. Getting the nursing faculty to let us administer courses like drugs and solutions, with a simulation for one credit. This concept was very critical to the operation of the Center. We built a staff and we also put in the first model of the dial access system. You know, a little thing that looks like Star Trek. Students can go in and dial numbers and programs automatically come on. It was a model system which cost $80,000 and it never worked. The University at that time was looking ahead and doing it as a trial towards a two or three million dollar system, which never developed because it was not a good system.

It was about this time when Harold Shively, then president of North Shore Community College, had received an $80,000 Exxon Grant and came over to find out what we were doing. After several visits from President Shively's staff, a leave of absence was arranged for me to go to that college and begin work on developing the necessary materials and ideas that went into fulfilling the terms of that grant.

Not long after this President Shively was offered the Presidency of Bunker Hill Community College (BHCC) in Charlestown, Massachusetts. He asked me if I would consider coming to Bunker Hill to start a Center there. My job was to start a Center, and as soon as it was operational I could return to full time teaching if I desired. I had no real idea what kind of support he would give this Center. At the time I really did not understand how important the Center was going to be and how it would coincide with his philosophy of what he wanted BHCC to be, or how all this related to his theory of individualized, personalized instruction.

During the first year I began to realize that he was not *talking* in the same terms as I was, but that he wanted what I was going to do. In cold hard terms, he had been in education a long time. He had been the founding President of North Shore. There were programs he started there that began to look as though he was trying to find a way to bring education to the individual. What he didn't have was the

delivery system. And what he didn't have was the knowledge of everything that existed that was already individualized. So at a campus where there was something called The Motivation Program, the Exxon Grant, and people in the math department doing Keller Plan and this sort of thing he seemed to be trying to find the answer.

What we began doing at Bunker Hill was something quite different from anything else that had been tried before in education. Both of us had come from backgrounds that were tried and proven; his in education and mine in a combination of education and industry. What we attempted for Bunker Hill was clearly just one step beyond anything else that had been tried. Historically it goes back a long way, to a sort of avant-garde of programmed instruction: the idea that there is another way of doing things besides the lecture-classroom format.

All the other Centers that had been established deliberately excluded anything that resembled remedial education. And perhaps this was the initial key to success. For a long time there had been the feeling, supported by plenty of data, that remedial education was expensive and did not work. We knew that the students who would be coming to our inner-city college had already experienced long years of failure and certainly more than enough remedial instruction. The idea was to get each student to work individually in a personalized way that was designed to self-pace the material so that students could begin to achieve success immediately, and that all this somehow be incorporated into a System for delivering that instruction beginning at the students entering-level of knowledge and continuing, at mastery level, until all program objectives had been achieved. Five years later at Bunker Hill Community College we think we have accomplished this task using a very innovative delivery System called the Learning Center.

CHAPTER II

LEARNING THEORY THAT LENDS ITSELF TO INDIVIDUALIZED INSTRUCTION

It is not the intent of this chapter to present an explicit model of learning theory and its resulting practice. Rather, the main purpose is two-fold:

> to acknowledge the eclectic nature of the model and to both cite and thank the sources of various theories that have contributed to the Learning Center Model for those who wish to explore them further

and

> to describe the progression and inter-relationship of various theories that we feel allow us a holistic (though eclectic) approach to students in our particular educational climate.

Initially, the model was fully grounded in the Behavioristic Theories of B. F. Skinner (Skinner, 1968, '71, '74). This certainly reflects both my own undergraduate preparation in psychology and the "state of the art" fifteen years ago as far as the products of instructional technology were concerned. However, over those fifteen years, the work of others has had much impact on the model. The debt to Benjamin Bloom (1956), Robert Gagne (1970), Ivor Davies (1971), John Roueche (1973), and James Russell (1974) is indeed great. However, we would be remiss in not making a special emphasis on the work of Susan Markle (Markle, 1961). We strongly recommend that those readers wanting an explicit description of the various theories cited read the original works of those persons.

There are four principles of B. F. Skinner which are of basic importance in the Learning Center model:

- operant conditioning
- reinforcement
- immediacy of reinforcement
- shaping behavior

There should be no doubt that the activities of the Center are grounded in reinforcement theory. Indeed, this theory has provided the systematic background for most self-paced, personalized, individualized methods of instruction. Simply put, when the student emits a response, some new stimulus can be introduced that causes a change in the rate of operant behavior. If it does change the operant rate, it can be called a reinforcement (roughly a reward). On the human level there are many types of reinforcers - money, gifts, privileges, attention, praise. One of the most easily applied reinforcers is the knowledge of results. Bugelski tells us when a human learner (even a child) emits a response, and this response is then shown to be correct, this knowledge of results is found to reinforce with sufficient potency to obviate any other 'rewards'... In relation to the principle of immediacy of reinforcement, experimental findings quite generally confirm that a 'correct' response should be reinforced within five seconds or there will be no benefit. (Bugelski, 1971).

The early products of what Markle refers to as the "process of programing[sic.]" reflected all of this with small, carefully ordered steps and immediate confirmation of responses. However, students frequently complained of the repetition of the short steps and were "bored" and teachers complained of the "low level" of the subject matter and were "superior." Since we do not intend to present a history of the field, let it suffice to say that the technology has advanced so there is much more sophisticated material available as well as theoretical positions which support a more comprehensive programming technique. What was important to us was the realization that the early programs just didn't suit many students; that there seemed to be different learning styles at work that were much broader than what we were accommodating; that we needed to look more carefully at types of learning in relation to the design of the Learning Center. At this point, we were well on the road to eclecticism.

At the present time, we tend to describe using a "modular" approach in the Learning Center concept of a delivery system for course content. Modularization here is predicated on principles of learning that are of main consideration to the model because they can be applied to the practical learning situation. These principles can be summarized as:

1. Whatever a student learns, he learns for himself.
2. Each student learns at his own rate, and, for any age group the variations in rates of learning are considerable.
3. A student learns more when each step is immediately strengthened or reinforced.

BEST COPY AVAILABLE

4. Full rather than partial mastery of each step makes total learning more meaningful.
5. When given responsibility for his own learning the student is more highly motivated; he learns more and retains more of what he has learned.

This approach allows us to deliver meaningful "chunks" of material to be mastered in a self-paced time frame while attending to the principles that the one who learns is the one who processes the information (the active participation of the learner) and that learning is enhanced by a system that allows for immediate feedback (knowledge of results) and reinforcement procedures. In addition, it incorporated itself smoothly with the systems approach described by Markle in "Programing is a Process"[sic.] and with the more sophisticated "self-instructional" ("programed" learning) materials which were appearing on the market. (Markle, 1961). Essentially, Markle clearly indicated that educational technology is really a way of looking at the total process of instruction and learning in a systematic way. We see that in some ways, it is a merging of the developments which have taken place in the fields of learning theory, systems approach, programmed instruction and audio-visual methods. Markle's five step system describes:

— clear definition of the entering behavior required of the student
— statement of specific behavioral objectives
— criterion-referenced measures which test those specific objectives to determine when the objectives have been mastered
— instructional sequences that are systematically designed and revised to produce mastery of the objectives
— performance data (Validation Studies) that verify that the first four steps do what they say they do and to some specified level of achievement (mastery) of the content

This gave us a necessary tool with which to critically examine units of instruction and an accountability measure, as well as an integration with various types of learning. We were then able to move away from the "small steps," excessive repetition, and low level goal statements (objectives) of the earlier approach. It should be obvious that the programming process is now in a much wider context of course development. Consequently, we use the term "programmed" to indicate a systematic development of planned application of learning priniciples, teaching strategy, and media selection techniques towards the realization of behaviorally stated objectives. By focusing on the process, we were able to think in more constructive ways about selecting multiple modes for instructional (learner) outcomes for different student learning styles.

For our purposes here, we have included the Learning Center statement on modularization:

> The basic concept involves individual units that cover major content areas of a course. Each unit is a curriculum package designed for self study. The units may be small or large depending on the objectives and content to be covered. Each unit contains behaviorally stated objectives, a pretest to determine the competencies each student possesses before entering the module, an instructional sequence, and a post test. As a result of pre- and post-testing, the validity of the unit can be determined.
>
> The instructional sequence may contain a wide variety of media and activities such as reading textbooks and articles, examining diagrams and photographs, viewing films and colored slides, listening to audio tapes with interactive packages, conducting actual or simulated experiences, discussions with other students and teachers. The units may be short or long. The units can be highly individualized and the student and the instructor can decide which units (thus, what objectives) are appropriate.
>
> A test may be given for prerequisite skills required of the students. The results of this test may indicate that the faculty member will have to prescribe modules to supplement those which make up the course, such as math modules for science, or reading units for history. There may be pre-tests for each module or for the entire course. These pre-test scores are used as the criteria for waiving the unit rather than as a measure of the student's skills.
>
> Behavioral objectives can be written in the cognitive domain, the psychomotor domain (where appropriate to the learning activity), and in the affective or feeling domain so that such

things as value or appreciation can be expressed. However, as with the cognitive and psychomotor objectives the method by which the attainment of the objective will be measured or evaluated must be implicit in the objective statement. Thus, each post-test is made up as a criterion referenced test based on the objective statement.

If pre-tests are used for a course as well as post-tests, then analysis of the results can give a measure of the effectiveness of the specific learning activity. Using a gain ratio formula which levels entering behavior,

$$\frac{\text{(post-test score)} - \text{(pre-test score)}}{\text{(possible score)} - \text{(pre-test score)}} = \text{Gain Ratio,}$$

a valid measure of what learning has actually occurred may be obtained and, consequently, the effectiveness of the learning activity may be assured(Russell, 1974).

The modular approach not only augmented a student-centered approach designed to respond to the inidividual needs of students with an individualized, personalized curriculum, but also aided the instructional team to select a mode of delivery appropriate for that particular individual. In addition, it allowed for flexibility in the role, and hence, effectiveness of the faculty in working with each student. Important here is the realization that the use of a systematic approach of this kind offsets the lack of definitive research evidence of instructional effectiveness because it tests course materials in a practical situation with students who comprise the target population, enabling continual improvements to be made. Finally, all this gave us a measure of both effectiveness and accountability, which is critical in these times of financial problems and crisis in post-secondary education in Massachusetts.

We can all agree on one general objective: that the educational system should be able to respond to the needs of each student on an individual basis. To this point, we have presented a viewpoint of how the steps in a systems approach to development interact with some practical principles of learning. The resulting validated learning sequences are referred to as individualized instruction. The principal

distinguishing feature of the individualized course is its predominantly self-instructional approach - not intended to replace the teacher but rather to have him be much more creative as a teacher.

Westinghouse Learning Press, in a guide to individualized instruction, also focuses on the learning process. They point out that in recent years a number of revolutionary developments promise to shake the foundations of the learning process (Westinghouse, 1975). Among the most prominent of these new educational developments are the following two suppositions:

1. Ninety-five percent of our students can learn a subject up to a high level of mastery. This conclusion is based on Benjamin S. Bloom's research on student learning. As incredible as it may seem, such a goal is not an impossible dream if an instructor is willing to accept two additional ideas that are rather new in educational circles (Bloom, 1968).

   The instructor must give up the traditional idea, based on the "normal curve," that approximately one-third of his students will earn no grade higher than D or F. Research indicates that twenty-five percent of any class fails when the teacher expects them to fail. (Canfield, 1968). What the teacher expects of any given class is the best single predictor of their academic success or failure. Second, not all students can learn at the same rate, but slow-learning students can be taught how to learn at a faster rate if they are exposed to instructional materials that provide positive reinforcement and successful learning experiences. Instructors must realize that some students require additional time to master certain material or that other students need a variety of learning experiences to master their subjects. However, when these conditions of extra time and appropriate materials are met, Bloom's stated goal of an individualized course is to provide the materials and strategies that are necessary to teach individuals who learn at different rates and in different ways.
2. The student learns best when he assumes responsibility for his own learning and when he makes discoveries on his own. In the final chapter of *Education and Ecstasy*, George Leonard poignantly describes an ecstatic moment that occurred one winter night when, as a boy of fifteen, he discovered on his own

the final coupling that required soldering to complete the wiring of his self-designed shortwave receiver. When this final connection was successfully made, "and the universe poured into his room on that starry night," he was, "as with every true learning experience, forever afterwards changed." An important step in the direction of self-discovery is the use of material that is self-instructional. (Leonard, 1968).

As stated previously, individualized instruction is accomplished by using materials that are self-instructional. These materials include educational components that are critical: clearly stated learning objectives, course content developed to meet these learning objectives, and tests that are keyed to the objectives. A broad and extremely useful definition of an objective is that it is a precise statement of a goal toward which some resource is being invested - a prediction of some outcome that is to derive from the efforts of an individual, group of individuals, or an organization. Such a statement serves as a vehicle for communicating what is being sought after to all those who are concerned, responsible, or affected. An objective is nothing more than a statement describing the intended goal of the instruction. It points the student in the direction of relevant content. Students will learn if they know what they are expected to learn; the learning objectives tell them precisely which material is important.

There has always been controversy or "educational flap" over the emphasis of behavioral (learning) objectives. Generally, faculty complain that these are too "low level" etc., for their purposes. To us, this statement has always been a reflection of a lack of knowledge of the levels of complexity and various types of learning objective statements. Usually examples are given of the lower levels of learning objectives:

1. Knowledge in which the emphasis is on recall, and
2. Comprehension in which the emphasis is on a grasp of meaning intent or relationship. In addition, this tends to be one-dimensional, as the focus is on the cognitive (knowledge) domain only. The more complex cognitive learning objectives are in this domain.
3. Application in which the emphasis is on applying appropriate principles or generalizations.
4. Analysis where the emphasis is on breaking into constituent parts, detecting relationships of the parts and the way they are organized, and organizing material according to a coherent pattern (questioning, appraising, debating).
5. Synthesis in which the emphasis is on putting together elements or parts to form a whole that reflects originality (formulating, designing, creating).
6. Evaluation in which the emphasis is on values, making qualitative or quantitative judgement, using criteria from internal or external sources and standards (assessing, comparing, judging), and the incorporation of other domains - psychomotor and affective - are usually ignored.

With due appreciation to Benjamin Bloom and his taxonomy of learning objectives, the description of the learning process in a film developed by Susan Markle and Philip Tiemann is one of the very best available today to combat the lack of knowledge about learning objectives, types of learning, and principles which apply to the selection of instructional and evaluation procedures. In their description of "The Learning Processes" program, Markle and Tiemann indicate that the "...emphasis is upon the need for procedures matched to the types of learning being dealt with. Mastery of these principles at a level which permits an individual to apply them requires further instruction. Our early attempts at such instruction, logically progressing from basic types of learning to study of the higher levels, brought about a negative reaction. Our students unfamiliar with the hierarchial nature of learning exhibited an impatient 'is this all there is' reaction to an in-depth look at the basic, 'memory' types. This overview portrays the interrelationships between lower and higher levels and thus reveals an important purpose for sufficient study of more basic types of learning."

This half-hour film is an excellent training device which we highly recommend. The four types of learning are similar to the three domains of learning proposed by Benjamin Bloom - the cognitive, psychomotor, and the affective. Markle and Tiemann call Bloom's affective domain the emotional level and they separate his single cognitive domain into the Memory and the Complex cognitive levels. They summarize the program as follows:

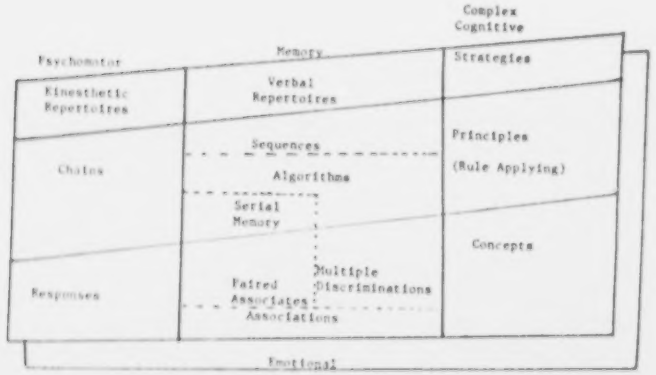
> ...psychomotor, memory, and complex cognitive learning may be referred to as the learning of voluntary behavior. Under-

lying these three types is emotional learning, the involuntary reactions to what is being taught and the way it is being taught. The learner's attitude toward each learning experience influences the amount of effort he will exert in gaining any of the skills, the confidence with which he approaches evaluation situations, and his tendency to approach further learning experiences of the particular sort. Knowledge of types of learning and the important interrelationships between types permits teachers to choose instruction and evaluation procedures which result in optimum learning of their students. (Markle and Tiemann, 1968).

A diagram of the four types of learning and some examples of each from the presentation appear below.

THE LEARNING PROCESSES

Susan M. Markle & Philip W. Tiemann, 1968



Some Examples From The Presentation

Response Learning	— Pronouncing a French nasal sound, ballet dancer balancing on one toe
Chain Learning	— Tying a shoe, loading a movie projector
Kinesthetic Repertoires	— Ball handling by a skilled athlete, speech imitations by a professional mimic
Single Associations	— Individual's name and face, one's own phone number

Paired Associates	— Historical names and dates, month and number of days in each
Multiple Discriminations	— Strange alphabet and the sounds of each symbol, wine tastes and names
Serial Memory	— Letters in alphabetical order, U. S. Presidents in order
Algorithms	— Working out long division problems, figuring one's income tax
Verbal Repertoires	— Well-informed baseball commentator, professor of history
Concept Learning	— Triangle, animal, literary point of view
Principle Learning	— Applying laws in science, predicting outcomes based upon cause and effect, statements in history or economics
Strategy Learning	— Productive thinking, i.e., a capable scientist with ways of dealing with new phenomenon in the field Creative thinking, i.e. generating multiple alternatives before evaluating possible solutions

The use of learning objectives as previously described represents an important tool in education. Students have no doubt as to what is expected of them. Ivor Davies points out that this recalls Whiteheads' insistence that education should produce people who *know* something well and can do something well. He also cautions us that it would be foolish to imagine that by simply defining one's objectives there will necessarily be an overall improvement in the quality of education. Clearly defined objectives derived from a bad syllabus will undoubtedly improve the overall quality of teaching; they will also result in teaching material which should not be taught at all. (Davies, 1971).

We have stressed, and perhaps you think overstressed, the interrelationships between a systems approach to course development and the importance of some educational methodology; in particular resulting in individualized instruction, practical learning theories, the use of learning objectives. The underlying assumption should be clear - that given sufficient time and properly arranged and delivered

instruction, the majority of students can demonstrate mastery level performance.

Unfortunately, one of the major conflicts existing in the field of education centers around the various methods of educational instruction. To be more specific, the conflict centers around which instructional method is the most successful in enhancing and producing successful learning. Evidence of this can be easily determined by skimming educational and psychological journals. Recently, however, the attention of some persons has turned to the area of "cognitive learning styles" in relation to various methods of instruction. In other words, which method does the individual student prefer? This thrust has given way to another view of educational instruction - namely, that one particular method of instruction might not be the significant factor to learning for all students, but rather, the individual student's cognitive learning style, paired with a complementary method of instruction might be the significant factor to successful learning.

Bunker Hill Community College, an urban, two-year institution, offers programs of study leading to the Associate's degree. In addition, there is an opportunity for the BHCC student to elect course instruction based upon his preference for one or more learning styles. The focal point of this *choice* factor in education is the individual, and the opportunity for choice is at one with the BHCC philosophy - individualization.

The outcomes of offering courses in all cognitive learning style modes are three:

1. true individualization results, as each student may have a course load composed of courses offered in various instructional modes which meet his individual preferred learning styles.
2. the student, rather than the modes of instruction, is the focal point of attention.
3. all modes of instruction are offered without institutional preference of one mode over another. This tends to produce a very eclectic approach to education which incorporates the various educational philosophies of Dewey, The Behaviorists, the Cognitive Field Theorists, Bloom's Mastery Learning Traditional Education and so on.

In the past eight years, there has been interest and concern in this idea of "cognitive style" or "learning style." The common element in the many different approaches to this idea is the awareness that a student brings to the learning situation many different behaviors, attitudes, and skills that have important consequences for the individual student's learning process. The conceptual approach that we have based our work on has its roots in the work done on cognitive style mapping developed by Dr. Joseph Hill at the community college level. Our approach to a student's preferred learning style is based upon how he approaches the theoretical and qualitative aspects of deriving meaning, the developmental relationship pattern he uses as he derives knowledge, and the method of reasoning that he uses as he moves through any situation where he is required to learn something.

In identifying his perferred learning style, the student responds to statements aimed at the following:

a. does he prefer to read or listen?
b. what is his personal commitment level and how does he feel about it?
c. does he require an authority figure in his learning experience or, does he learn in a peer-group interaction situation, or, does he prefer an independent mode giving him access to structured resources but allowing him to decide what "expert" he will consult?
d. what method of reasoning does he use? Does he reason in:
   — categories
   — relationships
   — comparison and contrasts
   — combinations of all three with the resulting learning "style"surfacing when faced with the problem of deriving meaning.
e. how does he use his sensory input?

The resulting profile identifies the key elements in the student's style which allow us to prescribe a corresponding mode of delivery of the appropriate learning sequences making up the individualized instruction.

For too many years, educators have been examining variables which surround the learning process. They have explored class size,

social structures, time constraints, and the like. Generally, the variability in learning behavior has been ignored. Mario Fantini comments on the state of the art:

> Our system of public education is basically a nineteenth century model which simply cannot respond to twentieth and twenty-first century needs. This outdated monolithic institution places serious restrictions on the people in it. It is unresponsive to students' distinctive learning styles and culture; limits individual talents and abilities of teachers to deal with the new public demands; thwarts parents' aspirations for quality education for their children; and overburdens taxpayers with high costs and low productivity... We need to open up educational alternatives within the framework of public education, *not by chance, but by choice.* (Fantini and Young, 1970).

If we do not become proactive in the process of changing the educational system then we certainly will be reactive. If we do not think our way into a system of living in education then we certainly will not live our way into a system of thinking.

The Student at Bunker Hill Community College

BY JAN BONANNO

The relationship between educational achievement of the "new student" and achievement levels in basic skills has been widely explored. In explaining the intensive problems of inner-city students, some educators declare they are untaught by their neighborhood schools in even the most basic skills. They proceed to point out that without basic skills, no learner can advance to more complex forms of learning. Some claim that for the socio-economically disadvantaged only fifteen percent of inner-city students can read. Others support this data in proclaiming that eighty-five percent of inner-city students cannot read. Problems in mathematics are equally as severe. Entering freshman students at BHCC in the academic year 1977-1978 (N equals 1397) had an average percentile score of thirty-one in fundamentals of arithmetic (Tenore, 1978). Proficiency in basic verbal skills is equally poor. Students are not prepared to pay attention or listen to what is going on around them. Subsequently there is interference with the chances of success in school. Further, the home does not support belief in the value of education and school achievement.

In addition to the problems in the basic skills area, the literature points out the physical, concrete style of lower-class students. Hewell and Forness (1974) draw contrasts between the "thing" oriented and non-verbal style of the lower class child, with more abstract, symbolic, idea-oriented, verbal style of the middle-class child.

It has been noted that the typical BHCC student is a "street-wise" individual. Eisenberg (1964) claims that a street-wise population consequently has a number of positive, adaptive strengths, such as being able to negotiate the slums. Whatever the socially and economically disadvantaged student learns about the world is greatly influenced and restricted by the environment in which he resides. This influence may handicap the student in the formal (traditional) school environment, where he lacks certain adaptive skills. However, in view of the individual's real world in which he lives, it is obvious that his behavior may be highly adaptive and flexible.

The new student does not value learning for its own sake or its liberating influence. Students are interested in gaining knowledge that leads to better jobs or that helps in practical daily living. Disadvantaged persons want equal opportunities in education that will help them improve their knowledge and skills and reach the mainstream of society.

Terms such as the new student, the non-traditional student, the disadvantaged student and the special needs student are often confusing. Labels like slow learner, disadvantaged, and culturally deprived, also have too great an influence on the attitudes of teachers and the programs they design for students. A student is non-traditional when the institution he attends must develop specialized access routes in order to provide learning opportunities to the student. Bunker Hill has provided suitable opportunity for these students without the stigma of classification.

The community college student has been described in other psychological ways. As a group, community college students have been found to have a more practical orientation to college and to life. They are not sure enough of themselves to move into new and different fields, and they appear to seek more certain pathways to success and financial security. Community college students are less confident in non-academic abilities whereas they do express confidence in non-academic areas.

In servicing the needs of its inner-city communities, Bunker Hill meets an educational challenge. Students attending Bunker Hill are reflective of the condition of the inner-city.

Average Bunker Hill students are products of inner-city secondary schools. Basic skills are lacking. Basic reading levels are somewhere around the sixth grade, mathematics competencies are usually addition, subtraction multiplication and division and, in many cases even these skills are lacking. The first college mathematics course will be basic. The student will begin to learn manipulations with fractions, decimals, percentages, and ratio and proportion. Percentile scores in vocabulary and spelling will be significantly below the national average. The student will have little, if any knowledge of the rules of English grammar, and in some cases be unable to write a complete sentence.

Average inner-city community college bound students are not only lacking in basic skills, but they do not know how to study. Consequently, they are at a great disadvantage in an educational situation.

About twenty percent of the population of Bunker Hill students are non-English speaking. They come from Spanish and Chinese communities within the city. There are also a number of Ethiopian and Greek speaking students. Some of these students do not speak any English. BHCC, like all other community colleges in Massachusetts, has an open door policy.

The open door policy means that there are no screening procedures by the Office of Admissions prior to accepting the student. Students are accepted on a first come, first serve basis. College boards are not required and the student's high school transcript is not examined as a criterion of accepting the student. In many cases, students at Bunker Hill are high school dropouts who do not have their diploma. They are accepted to the college with the stipulation that they have their GED high school equivalency certificate by the time of their graduation from the college.

The average age of the Bunker Hill Community College student is twenty-six years old. The range is seventeen to over sixty-five years. Students usually come from a "blue collar" background where there is little, if any, support for higher education. Frequently, they are the first in the family to attend college. Often motivation for being in school is more related to financial aid than learning. Some students are in college because of the poor job market.

Students at the college are street-wise. They know how to use and manipulate the system. They are not necessarily concerned about learning and their efforts are sometimes more directed toward manipulating situations so that they can get credit, graduate, and "get out."

The typical BHCC student often has no clearly defined goals in life. Many talk about their aspirations towards wealth; however, most expect that this will just come to them. Few associate monetary gain with hard work or years of self-progression and consequent achievement.

For the most part, BHCC students are pragmatic. They must see the use of the abstractions that make up course content. In relation to this, most students require immediate gratification or reward. They lack patience.

a value of all students, regardless of background and it nurtures a value of all students, regardless of background; and it nurtures those who attend. In offering education to a large number of inner-city deprived, Bunker Hill supports the non-traditional movement, which is to provide equal educational opportunity.

The role of the educator is promoting and maintaining education of the non-traditional student. Some educators place much emphasis on what they call the social responsibility of the educator to build a new and broader educational system that will give a deeper meaning to the quality of life. In terms of BHCC, educators have moved in the direction of responding to the demands of the Boston area student. It is apparent that a need exists to deliver educational systems that recognize the difference between traditional full-time students and the non-traditional student.

CHAPTER III

A DELIVERY SYSTEM FOR INDIVIDUALIZED, PERSONALIZED INSTRUCTION

The Learning Center at BHCC has a management and delivery system that lends itself to individualized, self-paced instruction. As such, it extends far beyond most concepts of a Learning Resource Center which consists of a library, audio-visual materials, and support media production facilities. The Center at Bunker Hill offers a structured, monitored, learning experience that uses continuous enrollment, and continuous progress schedules designed for each student in a framework which includes:

1. Diagnosis of entering-level behavior
2. Careful prescriptions of learning sequences which start where the student is and are sequenced to his final educational goal
3. Identification of each student's preferred learning style.

This framework, plus a specific course, determines the student's learning prescription in mastery level sequences until he reaches his educational goal. In this manner the student experiences an educationally honest process in the mastery-level concept of self-paced, personalized, instruction and is not pushed into a statistical mold called "normal distribution" to determine his progress.

Humans do not survive in an educational vacuum. In the BHCC Learning Center students interact with educational facilitators who understand both the learning process and the use of individualized instruction procedures as well as their own subject matter. The aim of the personnel and the individual instructor is to help each student with his learning experiences. At this point the instructor then becomes the manager of the educational experiences as well as the human being in control of the student's educational life.

PROGRAM IMPLEMENTATION

Essentially, all programs at all levels must conform to a five-step system of evaluation in order to be implemented into the Learning Center System. These five steps, once determined, become the key factors in how programs work in the system (Figure I).

The Five Step Process

1. Determine entering-level of ability (pre-test)
2. Identify a series of specific objectives (competencies)
3. Identify matching post-tests for these objectives (criterion referenced)
4. Sequences of learning activities
5. Enough performance data to determine validation

Once the five steps have been identified and the program either purchased or faculty-developed, then it is implemented into the System.

If the program has been faculty developed (not to be recommended), then decisions as to the level of entering behavior requirement, statements of specific objectives, criterion referenced tests, review of learning sequences and performance data must be identified by the instructor and the Director of the Center. For commercially prepared material, validation data must be available at the time of purchase. If it is not available then the Center must write to the publisher for this information. If none is forthcoming it is then determined that perhaps validity studies were never done. Today many publishers do not want to take the time to test their materials adequately before selling them to the public.

Once the proper criteria are met then the program must be implemented into the Center. Ideally, there are staff members who do nothing but implement programs. The task is sometimes a long one, as every component in the program must be catalogued and then distributed to its functional areas within the Center. For example,all tests must be removed from the program and placed in a systematic way into the testing room where students can get them when they are ready to test. If there is only one form of a test (a common error in most commercial programs) then the instructor or subject matter expert must design additional tests to complement the original. Mastery level learning frequently requires that students who do not master the test material the first time take the test again, in which case there must be alternate forms.

For each program implemented into the Center there is a program implementation book that serves as a tool for other staff and faculty members who are interested in any specific details about a given program. This implementation book contains a complete list of all

BEST COPY AVAILABLE

objectives, learning activities, and post-tests and answer keys for the entire program.

In-house faculty designed material requires another implementation process that allows for collection of data for program validation.

To this stockpile of information is also added other pertinent data such as preferred learning style identification, complete program orientation instructions, prerequisites, and location of specific materials within the Center. Once the Implementation Book has been completed, materials are broken up and distributed for student and faculty use. All tests and answer keys are placed in the Testing Center to be dispensed by a staff member and, if objective in form, to be corrected by a staff member. All subjective tests are corrected by the instructor. These tests are filed in folders by course, to be further distributed by work-study students into individual student folders, which are also kept on file in the Center for faculty, staff, and student use. For some programs, English in particular, it is important that students have access to their folders at all times so that they can check on results of their post-tests and their general progress in the program.

Audio-visual materials are identified and cataloged into the mediated room, while all commercially published objectives and learning units are usually purchased by the student in book form from the college bookstore. Objectives and learning units that are the products of in-house faculty development are printed and distributed by the Learning Center.

Once a given program is in place the faculty member who uses it will constantly monitor and modify the material until it works the way he wants it to. There are any number of ways to use any program, depending on the versatility and imagination of the instructor. It is then up to the instructor to make the program functional and workable.

The general flow process, from a faculty member's point of view might be further explained in the following manner (Figure 2). Once a faculty member observes a student's needs, assesses these needs into either program selection or design, the next step is to discuss the program and its potential for implementation with the Learning Center Director or her assistant.

If and when all preliminary criteria have been met, the implementation process is then turned over to the Center's Coordinator, who in turn assigns the program to a specific paraprofessional staff member. This staff member, together with a group of non-professional work-study students, works with the faculty member in the initial implementation of the program and its pilot or testing period.

THE MANAGEMENT MODEL

The Instructional Management Model System was established at BHCC. The model is based on objectives in the affective domain, (as well as cognitive and psychomotor), such as continuous reinforcement, evaluation of student progress and attitude, and assessment of new unforeseen conditions. The instructor constantly monitors evaluation of student progress and attitude, and assessment of these new unforeseen conditions. The instructor constantly monitors evaluation of materials and objectives, and should have a bank of materials available to modify the existing program in order to reach the desired stated educational outcomes.

The management model is structured to handle up to seventy-five students each hour, five days a week, thirteen hours a day, for the current space and staff allotted at BHCC. Students can work in over one hundred and fifty-six different college programs at all levels of development for credit. There are no remedial programs as such. It is conceivable that when the new expanded Center opens in 1979 these numbers can be tripled, provided the Commonwealth of Massachusetts provides us with enough funds to staff and service the unit. Over the past four years the Center has grown to now over two thousand two hundred students each semester in over five thousand selected programs for over seventy thousand hours of individualized, personalized, self-paced instruction. The total cost per student work hour is about $1.53.

STUDENT INTEGRATION

Student integration into the System is the same for all Learning Center Programs. Once the student identifies and selects a program of instruction, then the process of going through the program in a self-paced manner is also systematized (Figure 3).

When the student enters the Center he is given two IBM cards (the Center will eventually go to a computer system) on which to put

pertinent data for course registration. The master card is then permanently filed for staff or faculty reference and becomes part of a package of cards which identifies every program, on-going or completed, in which the student has been registered. The second card is the student work card. This card is put out for student use according to a specified time schedule and is used to keep a record of the amount of time spent in the Center, the unit or objective being worked on, the particular area of the Center where the student should be working, and, when taken, all post-test results.

Once registered, a pre-assessment is given to determine the student's entering-level of ability in the subject matter to be studied. Sometimes a norm-referenced test is administered to determine the student's reading level, and upon faculty request, a cognitive style mapping test is given to determine if the correct program has been selected for that student's preferred learning style.

In accordance with the results of the pre-assessment, a program prescription of specific modules and objectives is written by the instructor.

Program orientation is done either by Learning Center staff or the faculty member. The basic orientation includes not only the use of the program materials, but also how to use the Learning Center delivery system.

The second part of the orientation is usually spent viewing a film on learning by individual instruction. The several hours spent on orientation are particularly useful for students who have only been involved with traditional learning methods, and for the adult learner who has recently returned to school.

Once orientation is over the student is then ready to begin work on program materials. The System is continuous. Students enter the Center on their time schedule, pick up their work cards and materials and, depending on the objective or place in the program, go to either the study, testing, or mediated rooms to work. If mastery does not occur on a given post-test the first time then the student would contact the instructor, who will make revisions, and the process of mastering the objective will begin again. All students work self-paced through prescribed competencies until the program has been completed.

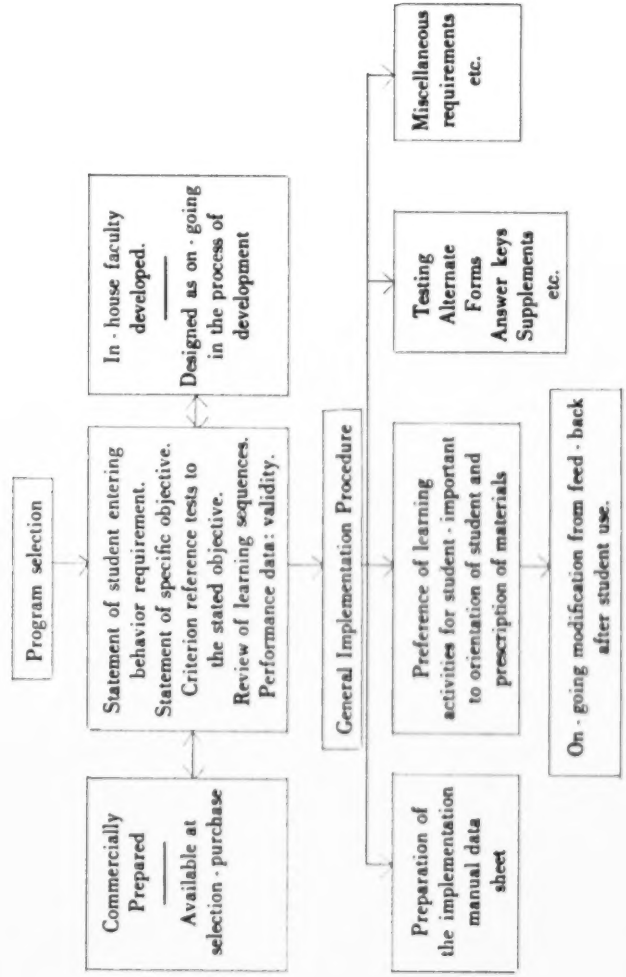
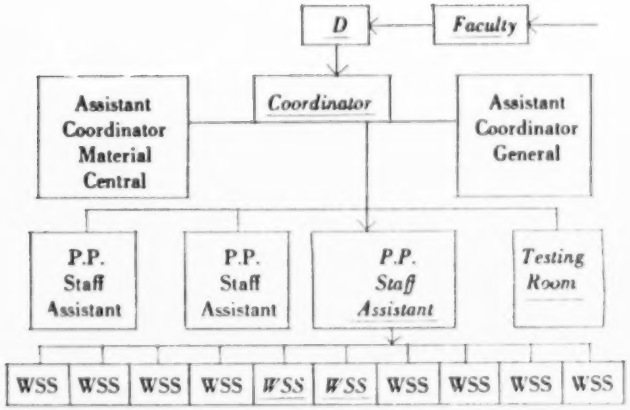

Program selection
Statement of student entering behavior requirement.
Statement of specific objective.
Criterion reference tests to the stated objective.
Review of learning sequences.
Performance data: validity.
In - house faculty developed.
Designed as on - going in the process of development
Commercially Prepared
Available at selection - purchase
General Implementation Procedure
Miscellaneous requirements etc.
Testing
Alternate Forms
Answer keys
Supplements
etc.
Preference of learning activities for student - important to orientation of student and prescription of materials
Preparation of the implementation manual data sheet
On - going modification from feed - back after student use.

FIGURE 1
LEARNING CENTER PROGRAM IMPLEMENTATION PROCESS



Key
P.P. — Para - professional
WSS — Work - Study student
Italics — Student and faculty contacts

FIGURE 2
GENERAL LEARNING CENTER PROGRAM FACULTY FLOW PROCESS

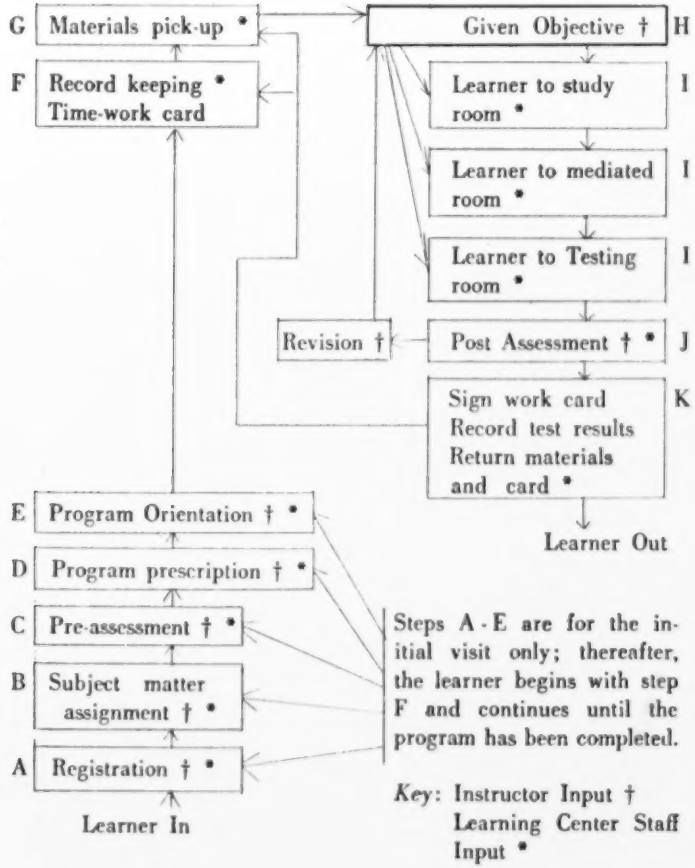


FIGURE 3
STUDENT INSTRUCTIONAL FLOW SYSTEM

MANAGEMENT IN THE SYSTEM

Management in the Center is mostly controlled by the CARD SYSTEM. When each student registers in the Center he or she is assigned a green Master Card and a student work card. On one part of the card appears the student's name, course and the time when that student must appear in the Center to work. On another part of the card is room for the results of tests, working objectives, time spent in the Center and a record of all academic activity.

The other end of the card contains vital information about the student and when the program was started, completed, withdrawn or dropped. It also includes the name of the faculty member to whom the student is responsible to complete course work. In this manner either the Center or the faculty member can contact the student at any time.

The other side of the card contains the student's work record. A teacher or Center staff member can tell at a glance just where the student is in the program and how well that student is doing. The blocks in the card must be filled in by the student. There is space for the date, unit, frame or objective, and the time spent during each session the student is in attendance. This card is available for faculty and student use at all times.

Perhaps the most difficult problem getting a new faculty-designed program from the drafting board to the Learning Center is obtaining Departmental or Curriculum Committee approval. The idea that one can teach some subjects from a Learning Center delivery system using total individualized instruction has been and still is controversial.

There are always divergent points of view that maintain that some subjects are just too sacrosanct to be taught any other way but "chalk and talk." Faculty who teach Literature, English, Languages, and other subjects in the humanities often maintain that these subjects involve an affective approach that cannot be measured in terms of behavioral objectives. On the other side of the issue are those who acknowledge that appreciation of literature, for example, cannot be measured, but that the measurement of the development of a student's ability to understand such aspects as theme, character and plot can be. Essentially then, while appreciation of the subject cannot be measured, the ability to master the techniques of approaching literature meaningfully can be established behaviorally by objectives and can indeed be measured by criterion post-testing that matches those objectives. Just don't try to measure the gleam in a student's eye as appreciation begins to creep in!

Although many excellent ideas have been doomed from the start simply because the necessary political climate for growth has not been established, this is essentially not true of BHCC. Program development towards modularization and self-paced instruction that is individualized and personalized is an administrative mandate that is totally supported by most of the administrative staff.

CHAPTER IV

HOW TO GET FROM "WE IS" TO "WE ARE"

Developing English programs using a Systems approach is not an easy task. Not all English faculty should attempt this approach to the teaching of writing, reading and literature. But all English faculty can adapt some portion of their curriculum to using a modularized, individualized approach to teaching academically poorly prepared inner-city community college students.

Preparing and teaching programs using an individualized self-paced modularized format is hard work. The work requires dedication and long hours of program development that often leads to modifications and revision. The teacher who undertakes this task will discover that the role of the faculty member will gradually change from one of an authoritative figure who dispenses knowledge by lecturing, to one who manages programs and students in such a way that they truly become independent learners, capable in the end result, of learning just about anything on their own.

In order to individualize you must know your student. You must know their entering-level of ability in reading and writing. You must know, as nearly as you can determine, about their preferred learning style. Age is a factor. As stated previously, the community college average age level is twenty-six, but the range is seventeen to over sixty-five. What will work for the young learner, the seventeen to twenty-three year old group, will not work for those between twenty-five and thirty-five, or for those who are in the mid-to-late life range. All these require different programs that must be individualized and adaptable to the Learning Center's System for delivery. It also requires that you as an instructor be an excellent manager.

The typical semester work load for a faculty member at BHCC is four sections of approximately thirty-five students. The Department commitment is to teach two full semesters, or thirty weeks of basic writing skills. In self-paced education it is possible for a student to work indefinitely on any given set of objectives; particularly, if mastery-level learning is required, as it is in the Learning Center. For this reason the college has an In-Progress (I.P.) grade that allows the student to continue beyond the fifteen week semester

period without penalty. Even so, a possible student load of one hundred and forty students in writing, almost all of whom are poorly prepared to do college level work, is an overwhelming task for any teacher.

A large number of the students at Bunker Hill are products of the Boston Public School System, a system that is not recognized for achieving excellence in academic training at any level except the very selective "Latin" schools. The average entering-level reading ability of our entering freshmen is around the sixth grade with a large proportion falling somewhat below. To further complicate this picture, for the next several years this same population will be admitted, by our Open-Door policy, that have not been attending classes for the two years that the Boston racial desegregation program has been in process, but who have nevertheless been graduated with diplomas. It is expected that the average reading level will fall even lower for the 1979-80 period.

Entering-level writing ability is seldom much better. For example, if you ask an entering class just how much writing was required of them during their high school years most will reply, "Almost none, or we did an occasional book report."

Scores on norm-referenced and criterion-referenced grammar placement tests usually show that most students need to be started at very basic levels: sentence structure, vocabulary, spelling, paragraphs, and punctuation. At the community college these students get another chance, at the taxpayers expense, to learn it all again.

Initially, academic order is brought to the chaos by searching out validated programs that will reach the numerous objectives that are required to begin students at entering-level. The instructor soon learns that one program is not enough. There must be programs written at different reading levels, for example, to allow students who cannot read above the third or fourth grade to begin to learn at that level. There must also be programs that will challenge the student who does not need any form of developmental work. Still, the basic objectives of both the department and the program must be met.

Integrated into these programs are the weekly and sometimes daily writing conferences required of each Communications I student.

The Learning Center System provides for the delivery of a variety of programs and at the same time allows time and space for faculty members to conduct conferences in the Center.

The System works so well that it is possible for a faculty member to serve as many as twenty students an hour, five or six hours of the day involving six or more programs in English at all levels. Students can also be working in the Center with or without a faculty member present and need only see the faculty member for a writing conference during a regularly scheduled office hour.

Essentially, there are a number of student checksheets for each program that the English instructor has in place for student use. (Figures 4, 5, 6). Once all entering level skills have been identified then the faculty member must hold individual conferences to assign specially tailored programs to the student depending upon that student's needs. For example, if a student indicates, by criterion-referenced placement test, that he does not need to learn about sentence fragments then that objective is not assigned. The same goes for all other program objectives that are required for the student to be able to pass the English Department exiting exam.

Once a student receives his objectives for the program then he must begin the orientation process that helps him overcome old learning habits and attempts to build in new ones.

For English students this process takes about two weeks. During this time the students register in the Center for the time they will spend there, and at the same time get a brief orientation to how the System operates.

Classes are held once a week for about six or seven weeks at which time most students are quite able to assume the responsibility of keeping scheduled Learning Center hours without the benefit of the group experience. It is also about this same time that the students are so far apart in their pacing and ability levels that class work, as such, is considerably non-productive to the majority. From then on, most of the work is done in individual conferences in the Learning Center.

The orientation experience also becomes interdisciplinary. Once the Learning Style Profile has been given, several sessions are held by members of the Learning Center staff to explain the results of the test and how to best use the information. Usually this means that

the student will begin to understand personal learning preferences, how to interact with other classmates, and how to recognize that faculty also have different learning and teaching styles. The process includes a series of films and discussions about how humans learn, and sessions are held to discuss some of the behaviors that were developed in other educational environments that prevented students from learning, or that created failure instead of success.

Most of the students at the community college, at all age levels, need constant reassurance, constant feedback, constant support. Their confidence level is usually very low and immediate success is needed to begin to boost this level to an area where they can begin to achieve. Once this happens then immediate and continuous reinforcement is necessary until the student learns that he can really do a great deal without the support of the instructor. For these reasons, it is a good idea for the faculty member to be in the Learning Center as much as possible, although the staff members will also provide added support when the need arises.

It is doubtful that anyone can yet identify the best way to teach college composition. Whether by choice or directive, many instructors will continue to use the traditional classroom approach. But, given the uncertain and heterogeneous state of the art, and the wide range of abilities at most inner-city community colleges, it seems that instructional materials should be flexible enough to fit into more than one instructional mode. Whatever the mode of delivery there should be an identification of the entering-level of behavior of each student.

In order to do this in English programs that are taught from the Learning Center the student must take a number of evaluating tests. The first test given is a criterion-referenced English placement test. This test is built into the general programs that are offered to the students. There may be several to choose from depending on the entering level of each particular student. This test will screen out the student's knowledge about the various things in writing and grammar that you want the student to be able to do when the program is completed.

Next comes a norm-referenced test that will determine the student's level of reading that is measured in GRADE LEVEL.

It is also important to know something about your student's preferred style of learning. Not all students can work effectively with total individualized instruction, or within a Learning Center format for delivering that instruction. Ideally, you should attempt to screen out students who do not find this mode of instruction to be their best learning environment, or try to involve them in a simulation activity that will help them to grow into new styles.

We have discovered over the last few years that our students really do not, or cannot, listen. Because of this growing problem it seems to be a good idea to test each student in just how well he hears and understands what you say.

Finally, the Communications Department at BHCC has a screening test that helps us to identify students who really do not need to take the program in English I.

Once all the testing is done and the students have their individual prescriptions, they must learn the layout of the Center and how it works. They must be familiar with the audio-visual rooms, the workrooms where students study, and the testing room where they will go to find out just how well they have been studying. Students should know that they will get all the help they need in the Center and that their teachers will be there when they have learning problems.

For English students using the Center there is also the assistance of trained tutors. Students can get additional help if they are having difficulties working on their objectives at almost any time of the day.

When an English student begins to work in the Center for the first time, the student must pick up the work card from the master file where it has been placed after registration. From that point on whenever the student enters the Center to work, the work card will be placed in the wallrack for the time period when that student is scheduled to work. If the student does not pick up the work card by fifteen minutes past the hour, the card will be removed. At this point the student will be marked absent on the back of the card. If the student is absent more than two session, that student will receive a notice from the Center instructing him that unless he shows up for the next session, his seat will be given to someone else for that hour.

Once the student has the work card, the next step is to pick up the materials that are needed to work in the Center. Depending upon the program assigned, those materials may be available in the Center or they may have to be purchased from the book store.

If the objective that is being worked on requires written work, the student may go either to the conference table or to one of the quieter work areas. If the work is of an audio-visual nature, and there is considerable material for English delivered in this mode, then the student may be instructed to go to the audio-visual rooms. Instruction and supervision in using material is always available.

Once the learning activities have been completed, then it is time for testing. The testing room is fully staffed by professionals and aids who assist students during the testing process. With individualized instruction students usually test frequently for either single objectives or group objectives. For the most part English students learn one principle at a time and test for this before going on to the next objective.

When the student has finished working, the student will fill in the work card, making sure to indicate the objective or unit that has been worked on, and just how much time was spent in the Center during that session. When the student leaves the Center the card is dropped into a box for that purpose.

The writing conference is probably the single most important part of the English program. As a former student of the Donald Murray Writing Conference Method, I feel that it is here that the faculty member has the most productive contact with the student on an individual basis (Murray, 1968). It is also here that almost all writing problems are corrected.

The writing conference begins the same way as an ordinary work session, in fact, it may be a part of a regularly scheduled session. It should be brief. The student comes to the session with the work card and an individual student folder which is available at all times in a cabinet located in the conference room in the Learning Center.

Careful records are kept on the student folder. Folders are date stamped for each conference that is held with the student. If the the student has not appeared for a weekly conference that is also noted at the end of the week. The student folder contains all the information needed to work with that student. Several items are reviewed at each conference: tests which have recently been completed since the last conference but which have not been noted on the green work card; papers which may have been rewritten or revised; work and study sheets which may have been completed; and if all

MASTER CHECKSHEET

This sheet contains the page number where assigned information can be found

Item to Be Done	Lesson No.	Chapter	Objective	Part	Page Number	Application	Page Number
	1	11	Grammar And Usage I	A	294	1, 2	296-7
	1	11		B	297	1, 2, 3, 4, 5	304-7
	2	12	Grammar And Usage II	A	314	1, 2	320-1
	2	12		B	323	1	326
	3	12		C	328	1, 2, 3	331-2
	3	12		D	333	1	337
	4	7	Writing and Revising Sentences	A	160	1, 2, 3	165-7
	4	7		B	167	1, 2, 3, 4	172-4
	5	6	Writing Paragraphs	A	134	1, 3	136-7
	5	6		B	139	3	145
	5	6		C	145	2	151
	6	6		D	151	1, 2 (study)	154-55
	7	1	Writing About Personal Experience	A	2	1, 2, 3	2-3
	7	1		B	3	1, 2, 3, 4	5-6
	8	1		C	6	1, 2, 3	7-9
	8	1		D	9	1, 3, 5	12-16
	9	2	Subject: Thesis Topic	A	20	1, 2	21-22
	10	2		B	22	1, 2, 3	24-5
	11	2		C	26	1, 2, 3, 4	32-35
	12	2	SEE WORKSHEET FOR WRITTEN ASSIGNMENT	E	50	1, 2	53-4
	13	2		D	35	1, 5	45-6
	14	4	Organizing Ideas	A	88	1, 2 (study)	90-1
	14	4		B	93	1, 2 (study) 3 write out	99-100 100
	15	4		C	100	1, 2 (study) 3 write out	105 105
	16	4	SEE WORKSHEET FOR WRITTEN ASSIGNMENT				

ON-CAMPUS STUDENTS ARE *REQUIRED* TO VIEW THE AUDIO-VISUAL MATERIAL THAT CORRESPONDS WITH EACH CHAPTER, UNLESS OTHERWISE INDICATED BY YOUR INSTRUCTOR.

OFF-CAMPUS STUDENTS DO NOT HAVE TO FULFILL THIS REQUIREMENT, BUT MAY DO SO IF THEY DESIRE. IN ORDER TO VIEW THE CORRESPONDING AUDIO-VISUAL MATERIAL IT WILL BE NECESSARY TO MAKE AN APPOINTMENT WITH THE LEARNING CENTER. THE CENTER IS OPEN EVERY EVENING EXCEPT FRIDAY.

FIGURE 4
MASTER CHECKSHEET

Item Analysis: Plan Placement

Name: ..... Course ..... Sec. .....

Item to Be Done	Item Number	Item	Audio Visual Aid	O.L.U. Number	Warriner's Reference Page	Post Test	Date Comp.
		Use of the Comma	The Structure of Language				
	1	Items in series		6673	626-628	Yes	
	2	After intro. elements	Those Crazy Hooks & Friends	6673	634	Yes	
	3	With phrases	" "	6673	628-30	Yes	
	4	Quotation Marks	" "	6676-77	649-53	Yes	
	5	Contractions	" "	6459	659	Yes	
	6	Colon, Semi-Colon	" "	6674	643-45	Yes	
	7	Part of Speech	All	6430	4-19	Yes	
	8	Review Parts of Speech	Tools of Language All	6465	677-79	Yes	
		Spelling					
	9	Sep. of prefix	Building Blocks of Language	6465	677-79	Yes	
	10	Latin Prefixes	Prefixes & Suffixes	6466	677-79	Yes	
	11	Latin & Greek Prefixes	Prefixes & Suffixes	6467	677-79	Yes	
	12	Pre. of Opposition	Before & After Pre-	6464	677-79	Yes	
	13	Use of Homonyms	Soundly Confusing	6461	683-91	Yes	
	14	Final "Y" Rule	Avoiding Pitfalls in Spelling	6458	683-91	Yes	
	15	ie-ei Rule	Avoiding Pitfalls in Spelling	6460	676	Yes	
	16	Use of sede, cede, ceed	——	6463	677-79	Yes	
	17	Double, Final Consonant	Avoiding Pitfalls in Spelling	6456	679	Yes	
	18	Verb "to be"	Tools of Language Verbs	6785	145-46	Yes	
		Vocabulary	Building Blocks of				
	19	Extens. work	Language	6461	545-61	Yes	
	20	Analogy	All	6936	390-92	Yes	

FIGURE 5
ITEM ANALYSIS: PLAN PLACEMENT

Item to Be Done	Item Number	Item	Audio Visual Aid	O.L.U. Number	Warriner's Reference Page	Post Test	Date Comp.
	21	Diff. in meaning	All	6937	538-43	Yes	
	22	Malapropisms	All	6938	———	Yes	
	23	Homonyms	All	6469	683-91	Yes	
	24	Similar Words	All	6470	545-61	Yes	
	25	Antonyms	All	6471	528	Yes	
		The Supplement Worksheets (Ask for them by number in the Learning Center Testing Room)					
	26	Run-ons, Frag.	Structure of Lang.	#1	———	Yes	
	27	Comma-splice runs-ons	All	#2	202-203 198-201	Yes	
	28	Coordination	All	#3	207	Yes	
	29	Subordination	All	#4	211	Yes	
	30	Subor, who, which	All	#5	———	Yes	
	31	Verbs	All	#6	———	Yes	
	32	Pronouns	All	#7	104-27	Yes	
	33	Prep. Phrases	All	#8	36-39	Yes	
	34	Punctuation	All	#9	626-37	Yes	

54

FIGURE 5 - CONTINUED

Item Analysis: Plan Placement

Name: ..... Course ..... Sec. .....

Item to Be Done	Item Number	Item	Audio Visual Aid	O.L.U. Number	Warriner's Reference Page	Post Test	Date Comp.
	1	Parts of Speech Nouns	Tools of Language Nouns	7844-5-6 (N)	4-19	Yes	
	2	Pronouns	Pronouns	7847-8-9-50	4-19	Yes	
	3	Verbs	Verbs	7851-2-3	4-19	Yes	
	4	Prepositions Conjunctions Interjections	Conj. & Prep. & Adverbs	7854	4-19	Yes	
	5	Adjectives & Adverbs	Adjectives	7855	4-19	Yes	
	6	All Parts of Speech (General) Review Review	Entire Series	7856-7	4-19	Yes	
	7	Spelling & Vocabulary Affixes	Building Blocks of Language Before & After Prefixes & Affixes	7858	683-91	Yes	

55

FIGURE 6
MECHANICS OF ENGLISH

Item to Be Done	Item Number	Item	Audio Visual Aid	O.L.U. Number	Warriner's Reference Page	Post Test	Date Comp.
	8	Double & Final Consonant	Avoiding Pitfalls in Spelling	7859	679	Yes	
	9	Final "E" Before a Suffix	Avoiding Pitfalls in Spelling	7860	683-91	Yes	
	10	Contractions	Avoiding Pitfalls in Spelling	7861	683-91	Yes	
56	11	Final "Y" Rule	Avoiding Pitfalls in Spelling	7862	683-91	Yes	
	12	ei-ie rule	Avoiding Pitfalls in Spelling	7863	676	Yes	
	13	The "NYMS"	NYM Family	7864	683-91	Yes	
	14	General Spelling	All	7865	676-82	Yes	
	15	Sede, Ceed, Cede		7866	677-79	Yes	

FIGURE 6 - CONTINUED

	16	Prefix	Before & After Prefixes & Affixes	7867	677-79	Yes	
	17	Homonyms	Soundly Confusing	7868	683-91	Yes	
	18	Synonyms	The NYM Family	7869	683-91	Yes	
	19	Antonyms	The NYM Family	7870	683-91	Yes	
	20	Closely-Related Words	———	7872	———	page 91	
57		Punctuation & Capitalization	The Structure of Language				
	21	Commas	Those Crazy Hooks	7874	626-30	Yes	
	22	Colon, Semi-Colon	Those Crazy Hooks	7875	643-5	Yes	
	23	Quotation Marks	Those Crazy Hooks	7876	649-53	Yes	
	24	Apostrophe	Those Crazy Hooks	7877	659	Yes	
	25	Capital Letters	Capitalization & Clauses	7878	———	Yes	

FIGURE 6 - CONTINUED

Item to Be Done	Item Number	Item	Audio Visual Aid	O.L.C. Number	Warriner's Reference Page	Post Test	Date Comp.
	26	General Func. & Cap.	All	787	648-52	Yes	
		Sentence Structure					
	27	Phrases	Sentences	7880	Look it Up	Yes	
	28	Clauses	Sentences	7881	Look it Up	Yes	
	29	Fragments & Run-ons	Sentences	7882	Supplement	Yes	
	30	Subjects & Predicates	Sentences	7883	Look it Up	Yes	
	31	Objects	Sentences	7884	Look it Up	Yes	
	32	Simple, Complex, Compound	Sentences	7885	Look it Up	Yes	
	33	General Review	All	7886-7	——	Yes	

FIGURE 6 - CONTINUED

the objective tests scores have not been entered on the work card then this is a good time to bring it all up to date.

Students must write at least one paper a week, sometimes more. Papers are done in duplicate, and the original is kept in the student's workbook. When all the housekeeping things have been taken care of, it is then time for the actual conference. It is probably a good idea to work on only one problem at a time, get the student to understand and correct this problem and then go on to the next.

When the conference is over the student must fill out the work card indicating what was done, and how much time was spent in the Center before returning the card when he leaves. Ideally, conferences should not take more than five or ten minutes per student. Adhering to this policy is mandatory if you are going to be able to work with all of your students. When one first begins conference teaching to large numbers, there is a tendency to over extend yourself, but a little practice allows you to learn to best use limited time so that each student gets the information that is needed at that time; hence, work on only one problem at a time. The faculty member must control the conference and its time limit.

As the semester progresses, faculty will discover that there will be a shift in the number of students that require individual conferences. Time reveals that some students do not need the benefit of a weekly session and may do quite well with minimal instruction, pass in papers to the testing room, and still progress quite nicely. Others may require longer sessions several times a week. It is here that the tutorial program is used most. Tutors can easily take up some of the work load by helping students who need extra instruction on specific objectives or need help revising and rewriting papers.

Each semester there is a screening program to select students who are willing to become tutors for English programs being taught in the Learning Center. Students chosen for this program must go through fifteen weeks of very careful prescribed instruction. The program is managed by objectives and students are given program work cards as they would for a general course of instruction. Their progress is checked each week to make sure that they are keeping up with their assigned studies.

Weekly sessions are held for one and a half hours with the instructors who designed and manage the program. The tutors must not

only know how to work within the Learning Center's delivery system, but they must also be familiar with how to teach by objectives, as well as know something about all of the programs that an English instructor may be using for students who work in the Center.

Their job is more supportive. They are scheduled to work with students for at least two hours each week and they are carefully matched to work with peers where there will be considerable compatability. There is ample time allowed during instructor sessions to iron out major tutoring difficulties as they arise. The program is going into its second year quite successfully and has been an added advantage for any English student using the Center for program work. Compensation for the tutors takes the form of contract credit or work study monies.

By now you are probably wondering how this all is managed. Well, it's really quite simple. If the student has been taking a test and that test is objective in nature, that is, it can be corrected by the Learning Center testing room attendant and the score is immediately entered on the students green work card, thus giving immediate reinforcement for the task accomplished.

If the test is subjective or if it contains writing components, then the testing room attendant files the test in a folder provided for the instructor who then picks up the materials, corrects them, and then gives them to a work study student who files it in the proper student folder, where the student may see it at any time when the Center is open. All student papers, worksheets, or any written materials are handled in this manner. No papers or tests are given directly to an instructor, nor are they ever placed into the folder by the student.

Control is handled by the student's green work card. It is here that the instructor can locate all the information that is necessary to find out just how a student is doing in a given program. The dates on the card indicate just when and how long a student worked on a program. The units indicate just where the student is in a program and how that student is progressing. Careful checks by the faculty member can indicate when the student has a problem and how to correct that problem, modify it, and quickly change it. It is a good idea for faculty members to check their students' work cards at least once a week.

There are also other checks and balances. The Center sends out "tickling" letters when there are absentees, of which there are usually not too many. The rate of absenteeism in the Center is less than twenty percent. Faculty also have a series of letters that go out when there are absentees.

The students' individual folders also reveal other kinds of information: has the student been attending conferences? how much work has been done on an objective? how many tests have been taken and passed? how many tests have been taken that still need more work, or perhaps modification by the instructor? And of course, there is always the Registrar's mid-term reports!

Managing the class situation in individualized instruction in English can take on a variety of modes. A number of faculty that work in the Bunker Hill Center like to combine Simulation games and large group work with the objectives assigned in the Center. On very rare occasions some lecturing may be done, but this is usually done not so much with abstract materials, as with the more concrete examples of how the abstractions can work in real life. These sessions are often televised so that students can review them by themselves.

A lot of individual work is done with students, as is work in small group sessions. Frequently students work alone in small group sessions on very specific tasks that deliberately eliminate teacher involvement, and sometimes students work alone on problem solving tasks that help them to understand the role of group experience in individualized instruction.

There are a lot of ways to combine the so-called class situation with individualized instruction as it is delivered in the Bunker Hill Learning Center. For years now, innovative faculty members have been finding solutions to teaching the highly diversified populations that are now entering most inner-city community colleges. We know one thing. The traditional approaches to teaching these populations usually result in high attrition. The more innovative colleges that deliver instruction on an individual basis somehow lower that attrition.

INTRODUCTION TO LITERATURE: A GENRE APPROACH

Beginning Spring semester, 1977, a pilot program in developmental literature was designed and implemented. The program was developed to offer second semester Freshman a literature course in the Learning Center that would be competency-based, individualized, and self-paced. The program was designed to be a genre approach to the teaching of introductory modules in poetry, drama, and short story.

At the request of the English Department Chairman, the program was specifically designed to be taught with an Instructional Mode that could be implemented into the Systems approach that delivered individualized, personalized, self-paced instruction at mastery-level.

Original program design included integration of a validated series of behavioral objectives and criterion post-tests from the Westinghouse Learning Corporation, combined with a literature anthology, a good dictionary of literary terms, and carefully selected audio-visual materials.

The delivery format consisted of the student working two hours a week in the BHCC Learning Center, plus one hour a week in a seminar discussion and/or a student teaching/learning presentation, done either in small groups, or in pairs of students.

As the program was designed to accommodate students at their entering-level of ability, two extra modules in the areas of orientation and classification were added to address the needs of students who had no previous exposure to either the writing process, or to the study of literature. At that time there were no pre-requisites in order to register for the course.

It was decided that a formative evaluation would be redundant to the process, as the initial program was already designed around previously validated material. Summative evaluation would, of course, begin to surface with the results of the criterion post-tests.

The commercially produced program was written at the eighth to ninth grade level of readability and it was assumed that this level would be adequate for any student entering the program. As it turns out, this was a mistake.

An Orientation module was designed to determine student writing

ability, and a Classification of Literature module, which consisted of four units, identified and refreshed basic terminology in the subject matter to be developed.

Poetry, drama, and short story modules contained a variety of general objectives, plus special units for advanced students. From this variety of units, the instructor could make decisions as to individual prescriptions. There were enough modules for students who were beginning the study of literature and those who could handle advanced material as well.

The instructional mode chosen was adapted from the Markle and Tiemann film *Programing is a Process* [sic] (Markle & Tiemann, 1968). This mode adapted well to both program implementation and the Learning Center's System for delivering individualized, personalized instruction. The film emphasized the classic five-step process: pre-assessment; behaviorally-stated objectives; sequential learning activities; post-assessment, and validation.

Use of this mode systematically provided for adequate pre-assessment to determine the student's entering-level of ability in the subject matter to be taught. After entering needs were determined, a set of competencies (behavior objectives) were assigned from the master program to meet both the requirements of the instructor and the general objectives of the department.

To master each objective the student would progress through a series of learning activities to meet each assigned objective. When the post-test on a particular objective was mastered, then the student would go on to the next objective. Seminar and group work were strongly recommended, but not required. In the event mastery did not occur, then a revision was made in the teaching unit and the student proceeded through the learning loop again until mastery of the objectives had been achieved (Figure 3). Alternate tests were provided for this purpose.

Program implementation process began with the selection of commercially prepared materials. The job of the instructors was to personalize this material so that it became "their own" instead of attempting to develop faculty-produced programs. Faculty members are usually not trained in program design, and for this reason would not attempt to create programs of their own. The job is simply too difficult, time consuming, and requires expertise in learning theory, and how programs are put together.

A better way to begin a new program is to purchase material which has already been tested and validated and then adapt it to your personal way of using materials.

Decisions as to the level of entering behavior requirements, statements of specific objectives, criterion referenced tests to the stated objectives, a review of all learning sequences and optional resources, and performance data (validity) are then identified and determined by the instructor. Although commercially prepared material for the literature program was already validated, it was still necessary to collect new data to comply with the on-going changes which would be made when summarizing the material.

Once the above criteria had been met, the program was assigned to a specific Learning Center staff member who was in turn assigned to the faculty member who would be initially teaching the program. For the purposes of the BHCC Learning Center's delivery system, the program had to be completely implemented into the general management system. Implementation included filling out the Implementation Book so that other staff members could locate materials and learn about the specific details of the program. The Implementation Book contained a complete list of all objectives, learning activities, post-tests and answer keys for the entire program. To this stockpile of information was also added other pertinent data such as preferred learning style identification, complete program orientation instructions (not the same as the program orientation module for the course), prerequisites, and location of specific materials within the Center.

Once the Implementation Book had been completed, materials were broken up and distributed for student and faculty use. All tests and answer keys were placed in the Testing Center to be dispensed by a staff member and, if objective in form, to be corrected by a staff member. All subjective tests were corrected by the instructor.

Audio-visual materials were identified and catalogued into the mediated room, while all commercially published objectives and learning units were purchased in book form. Student integration into the System was the same as for all other Learning Center Programs.

Initially, the most difficult problem getting the program from the drafting board to the Learning Center was obtaining English

faculty approval: not an unusual circumstance for a Department of English, who traditionally are among the most resistant to change.

Fortunately, the literature program had ample support from administrators and key Learning Center personnel, and as it was designed at the request of the Department Chairman there were no problems from those who taught literature in a traditional manner.

The first module to be taught in the pilot semester (Spring, 1977) was drama, essentially because all of the necessary materials were in place. Instructional goals and objectives had been defined, learning strategies devised, teaching materials developed, and course design approved and implemented. There were two small sections registered: ten in the Evening Division and ten in the Day Division. It should be explained that there is a great deal of difference in the working habits and motivations of these two populations. The Evening Division is more motivated, harder working, and the Day Division is quite the opposite, generally speaking.

As literature is a Liberal Arts transfer requirement, and the program was designed to be an alternative mode to parallel traditional classroom instruction, these numbers were somewhat higher than expected.

The module began smoothly but after a few weeks showed signs of distress. Reading tests indicated that seventy-five percent of the Day Division and sixty-five percent of the Evening Division were reading below the eighth and ninth level of readability. Other problems were difficult to isolate but could probably be summed up by addressing the following criteria

1. Inability to follow instructions
2. Inability to read above the literal level of interpretation
3. Problems with self-discipline
4. Poor high school preparation
5. Poor study habits

These general problems are familiar to most instructors at inner-city community colleges, but for this program they only applied to Day Division students. The Evening Division in spite of low reading scores, was responding well. After further evaluation and discussions with the Day Division students, it was decided to change the format and method of presentation for the next module which was the short story.

Learning activities and objectives for this genre were rewritten. Directions were simplified and all activities and post-tests were subjective, which meant that the student must respond in writing to all assigned material. The number of objectives covered in this genre was greatly reduced and emphasis was placed on six key objectives: analysis of plot, characterization, point of view, conflict, symbolism, and irony. Other objectives became secondary in the above major headings.

Objectives were also written at seven different levels:

Problem solving
Principle solving
Concept forming
Analyzing
Investigating
Elaborating
Responding

This seven-level classification scheme was useful in sequencing sets of objectives on the basis of complexity in the learner's task. (Education Commission of the States, 1976). Analyzing these sets of objectives in terms of logical sequence and levels of complexity is well-covered in the basic works of Benjamin Bloom, David Krathwohl, J. P. Guilford, and Elizabeth Simpson. It is only necessary here to note that objectives must be used in order to gain relevance and validity. Examples of these seven levels of objectives and their explanation can be obtained from the *Directory of Measurable Objectives Sources.*

It was decided to include some developmental reading instruction for those whose reading tests indicated that their level of readability was below that of the objectives. Later, it would be necessary to have objectives at all levels written for a variety of entering-level behaviors.

The new approach was well received and began to produce more positive results. An unplanned result was the impressive improvement in general writing skills, as all learning activities and post-test now required that questions be addressed in essay form.

The selected teaching/learning units were not particularly successful with this population, but were an example of a format which needed further evaluation and modification. This modification along with other structural changes was built into the program for Fall, 1977.

Post-test results after modification indicated that at least eighty percent of the objectives were being mastered eighty percent of the time. An early indication that both the objectives and the post-tests were working effectively. Early data collected during the pilot semester proved valuable in making changes and modifications for the second stage of development.

The Instructional Mode, Systems Approach, Instructional Management Model, and student integration into the System all had been proven effective in other disciplines over the four year period that the Learning Center had been in operation. It worked no less efficiently for Introduction to Literature. The delivery system worked well. There was no need to modify or make changes at this point.

The program is now in its third stage of development. Objectives have been rewritten and simplified for all three genres and considerable emphasis has been placed on developing writing skills in the course of the program, as well as developing advanced reading comprehension skills.

There is now a prerequisite for taking the program. Students must have completed at least one full semester of Composition before they can register for any literature course.

After the initial furor died down over whether or not it was feasible to even teach literature using a delivery system format, there has been a modicum of acceptance among most faculty members. The program is now offered with the same catalogue number as the traditional course in Introduction to Literature, and serves as the alternative approach for those who want the totally individualized, self-paced approach in the Learning Center.

On-going change in the program has indicated that there is still need to further develop objectives at different levels. Clearly, there should be no remedial approach to the problem areas. Various levels of entering ability should have corresponding objectives that allow that student to begin wherever he may be and continue until the full range of departmental objectives has been met at mastery-level. The remedial approach to a Systems format in educational design is a common, but opposing philosophy to that which is in

BEST COPY AVAILABLE

operation at BHCC which excludes programs in remedial and developmental education as such. Use of remediation tends to divide and identify students that need that type of work. This type of student tracking is believed, by key administrators at BHCC, to be educationally unsound, financially wasteful, and emotionally and psychogically debilitating to students who work in those programs. Introduction to Literature avoids this problem by offering objectives at all levels to meet the needs of all entering level behaviors.

CHAPTER V

USING SIMULATIONS AS THE CORE AROUND WHICH A COMMUNITY COLLEGE IS BUILT

Since 1974 BHCC has been building a part of its curriculum around simulation games. Courses in key disciplines are integrated into simulation models such as SIMSOC (A Simulated Society), Yalta (A Simulation of the Conference at Yalta), Mathaphobes and Scribaphobes, for students who fear mathematics and writing.

Theoretically, for the inner-city populations of a community college dedicated to individualized, personalized instruction, it makes sense to include a simulation concept with general program instruction.

The basic idea, built around concepts taken from Edgar Dale's "Cone of Experience for Media Selection in the Affective Domain" and the further interpretation by Walter Wager on experience for Cognitive and Affective Learning, has been gradually developed with core curriculum. (Wager, 1975).

The "Cone" (Figures 7 - 8 - 9) is designed to show twelve levels of abstraction. From the direct purposeful experiences of a multisensory nature, usually found in small children, to the highest levels of abstraction which are verbal and visual symbols: or, if applied to educational delivery formats, the lecture-book method of instruction.

In the cognitive domain, most delivery formats in higher education occur at the highest level of abstraction, or "talk and chalk." Steps two through ten occur in conjunction with the "chalk and talk" method, but usually only to emphasize by audio-visual methods, or what has already been stated in the classroom or the textbook.

Edgar Dale tells us that people learn at different levels of abstraction, depending upon how the student responds to reality, and how capable that student is responding to abstractions. If the task is too good idea to begin at the lowest level of abstraction which will deliver Or if the student is not yet ready to understand abstractions, that is, cannot read well enough to interpret or comprehend certain materials, or write well enough to recreate mental abstractions into encoding, then that student greatly increases the possibility of failure.

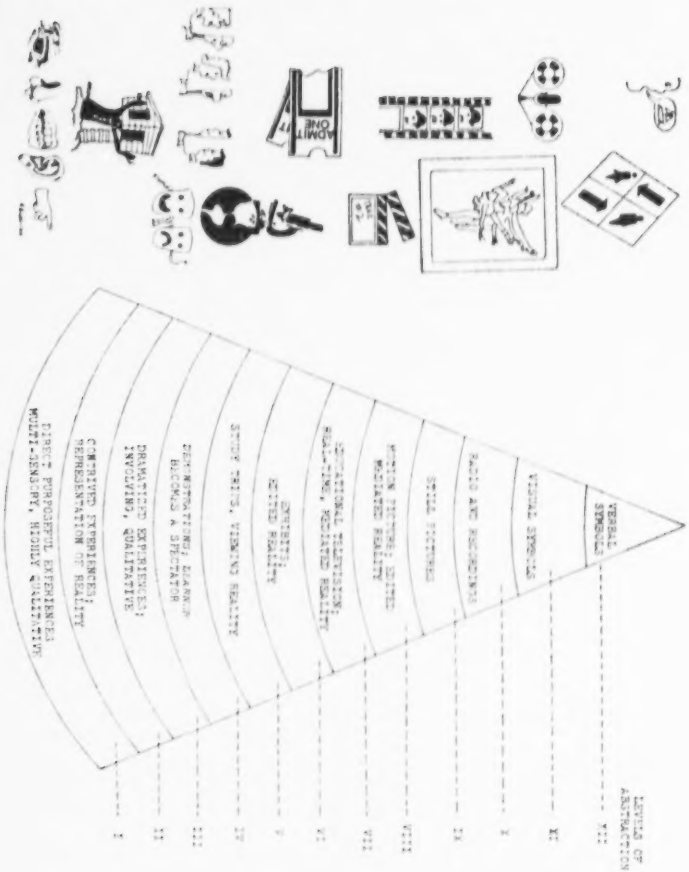


FIGURE 7
EDGAR DALE'S CONE OF EXPERIENCE*

*Dale's Cone of Experience (Adapted from **Audio-Visual Methods in Teaching**, Third Edition by Edgar Dale. Copyright 1946, 1954, 1969 by Holt Rinehart and Winston, Inc. Reprinted by permission of Holt, Rinehart and Winston.)

LEVELS of ABSTRACTION

Levels of Abstraction	
1	Direct purposeful experiences; Multi - sensory, Highly qualitative
2	Contrived experiences; Representations of reality
3	Dramatized experiences; Involving, Qualitative
4	Demonstrations; Learner becomes a spectator
5	Study trips; Viewing reality
6	Exhibits; Edited reality
7	Educational television; Real time, Mediated reality
8	Motion picture; Edited mediated reality
9	Still pictures
10	Radio and recordings
11	Visual symbols
12	Verbal symbols

FIGURE 8
EDGAR DALE'S CONE OF EXPERIENCE

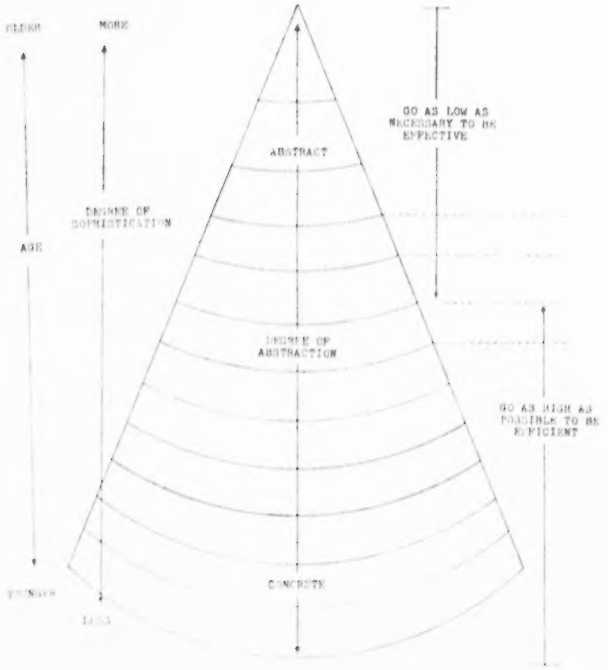


FIGURE 9
EDGAR DALE'S CONE OF EXPERIENCE*

*Dale's Cone of Experience (Adapted from **Audio-Visual Methods in Teaching**, Third Edition by Edgar Dale, Copyright 1946, 1954, 1969 by Holt Rinehart and Winston, Inc. Reprinted by permission of Holt, Rinehart and Winston.)

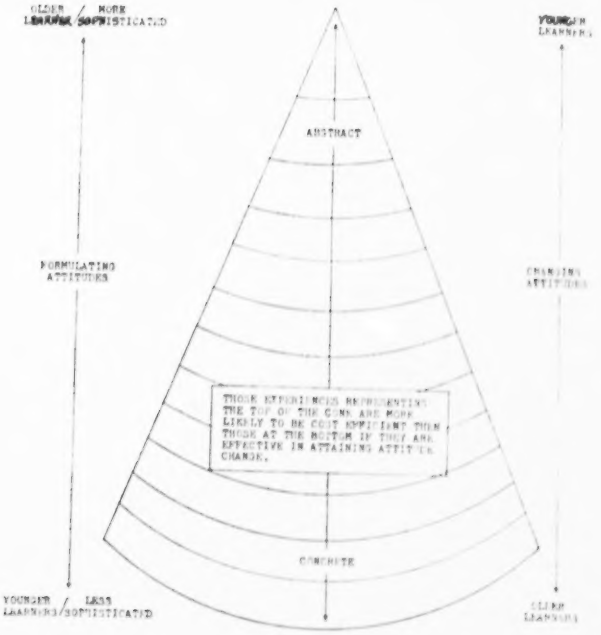


FIGURE 10
EDGAR DALE'S CONE OF EXPERIENCE*

*Dale's Cone of Experience (Adapted from **Audio-Visual Methods in Teaching**, Third Edition by Edgar Dale, Copyright 1946, 1954, 1969 by Holt Rinehart and Winston, Inc. Reprinted by permission of Holt, Rinehart and Winston.)

Given these problems, the student will also not succeed if verbal (lecture symbols) and the textbook (visual symbols) do not have a concrete example which can be experienced in a real-life way so that the learner can move easily from one level of abstraction to another.

If you examine the Cone carefully you will note that levels one and two (contrived experiences and dramatized experiences) are low enough on the Cone to warrant easy success in a task. According to the studies of Wager there are four facts to be remembered when dealing with the Cone and cognitive abstractions:

1. Go as HIGH on the Cone as is possible for EFFICIENCY.
2. Go as LOW as possible to be EFFECTIVE.
3. Move from the CONCRETE to the ABSTRACT.
4. TIME is your variable.

If you apply this to the average community college student who is generally poorly prepared to do college level work, it is probably a good idea to begin at the lowest level of abstraction which will deliver the most concrete format available, that is level one: contrived experiences representative of reality or simulations. But before we discuss this further, let's look at the other component.

The Affective Domain or that domain which deals with attitudes cannot be emphasized enough, particularly when dealing with community college students at all age levels and at a variety of stages of growth and development. If you look at the Cone again you will see that here we are concerned with two key ideas (figure 10):

1. Changing attitudes
2. Formulating attitudes.

Many community college students enter college for the first time after many failures at academic life. Not only are they poorly prepared, but their anxiety level is high and their confidence level is low. For the most part, attitudes formed over the years have mostly been negative in proportion to their lack of success at academic achievement.

Probably the first thing a community college instructor must do before the student can begin to learn effectively is to somehow change the student's general outlook on school-work and to install some new behaviors which will help the student succeed and achieve academically.

In the Affective Domain there are four more principles to remember as they relate to the use of the Cone:

1. If you want to establish attitudes, probably all the levels will accomplish this task, and of course the most efficient will be those that are abstract, like verbal and visual symbols.
2. Experiences representing the top of the Cone are more likely to be *cost efficient* than those at the bottom, but will probably produce failure for the average community college student.
3. *Maturation* is important to the ability to form attitudes from abstract messages. The older the student, the easier it will be to use abstraction – but,
4. There is little credibility to the sources of verbal messages for the adult learner. Adults in our society tend to distrust verbal messages. They want to be shown to believe.

The principle behind success in the community college for most poorly prepared students is the ability to *change existing attitudes* and *formulate* new ones in their place. Experience has shown that this can best be done by beginning at the lower levels of abstraction and moving slowly into the upper levels after a modicum of success has been achieved by the student, and an area of trust has been developed between the instructor's pressure to keep up with a structured class situation.

The mode of delivery is very concrete. The students experience, in a simulated form, the activity that will be required in their actual learning objectives. For example, in SIMSOC the students must structure their own society. What happens when they first realize that they should form a government? Well, no one really knows how to do this, nor have most of them ever given much thought to this task. There is immediately a run on the government modules in the Center. What happens when the economy begins to fall apart? Interest in economics or math begins to take on some importance. What happens when they discover that the society really is not communicating very well? There begins to be an interest in some method of dispensing information, like a newspaper or a television broadcast, and one sees the beginnings of real interest in English courses and the writing process.

At Bunker Hill, simulation games are integrated with a variety of subjects, five of which make up the entire semester offering for

each student. The Simulated Society (SIMSOC), for example, grants from twelve to fifteen credits and might include: English I or II, Logic, Drama, Music, Economics, International Relations, Literature or another Humanities course. Each semester offers a different group of four selections plus one elective.

In the SIMSOC game session, which meets for three hours every week for the fifteen week period, the environment is altered from that of the traditional classroom to one which is structured, according to the rules of the game, into separate regions, which all meet in one large room. The objective of the game is for the students to set up and control a society of their own choosing. They must learn to problem-solve.

Regions are randomly selected from among the participants, who may number anywhere from forty to eighty. Regions are organized so that they control the various aspects of a given society. For example, there is MasMed*, which controls all communications or media for the society; there is Judco*...which enforces whatever kind of law the society agrees upon; the Empin* region which controls all industry and therefore the economic and labor force; and in most societies, there is also a region which contains a group of people who are totally without resources of any kind.

Students must learn to solve first their own personal problems within their groups as well as those problems that relate to the survival of the group as a whole, as that group must interact with the total society.

Students must also be present at the three-hour interactive session where the society actually does all of its work. Absenteeism is reflected on the National Indicators, the economic chart that reflects the state of the society, or the condition of its gross national product. If students are absent from a region, then the national indicators fall for the society as a whole. If they fall too low then the society will collapse.

Students must make their own decisions. Faculty are not allowed to interact, although they are in attendance at all group sessions. What happens then? Will the course in sociology provide solutions? Will American government allow the students to recognize their need for providing a government structure? What about communications? How does the society depend upon its members to communicate properly? Students must decide for themselves about their

* Active group components within game structure

court system, their methods of communications, their officials, and their government. The simulation game imitates the real thing to the extent that the students choose to work out the forming of the society through various efforts by groups or individuals. The course work, which parallels the actual simulation, is provided to allow students to begin to move from the concrete experience to the abstract theoretical base and allows them to make informed decisions about real-life problems, in a structure which they have developed themselves. In this case, a total society. The simulation game is as viable as the students choose to make it, since they control it.

Looking back, simulations seem to be the answer to the fragmentation that occurs when one tries to teach a theory without using a practical application. Early use of simulations allowed interested faculty to integrate both theory and application with students who often, for a variety of reasons, came to college with high expectations, but who were poorly prepared to begin college level work.

Continued use of simulation games began to attract both faculty and students alike, but for quite different reasons. Faculty found that the use of simulations was an excellent way to "backward chain", and bring about direct purposeful experiences to which theory could later become related. Students began to develop long-lasting friend-ship groups and growing serendipity. They began to work together on assignments, help each other freely when courses or objectives got difficult, and because inner-city students are transient at this college, they began to meet outside of school as well, forming community social groups, day-care arrangements, and of course became avant-garde of bigger and better simulation games for ensuing semesters.

Looking ahead, the College plans to open a much expanded Teaching-Learning Center with its own space for simulation games that will be self-contained with faculty and student turfs. Planned are multiple sections of simulations reflecting course offerings in all majors. Also planned is the possibility of extending the one semester game into a full year.

Simulations have led to other innovative offerings at the College such as Mathaphobes and Scribaphobes; courses that combine group psychology with mathematics and writing for students who are afraid, or unable, to succeed in these skills.

Flexibility in selection of such programs is seemingly endless and future plans include as many as one hundred or more students in one game each semester. Although most games are designed to serve about thirty students, the College has recently extended this number to seventy-five with excellent results. Incidentally, the attrition rate with this population has been between two and four percent as opposed to the normal attrition rate of forty-five to fifty percent for first semester freshmen. Normal attrition for regular Learning Center programs is also low, about twenty percent for in-coming freshmen and slightly lower for ensuing semesters. Attrition in traditional classroom format, while lower than most in the system, is normally fifty percent for an inner-city college with an open-door policy.

Recently, an article in *The New York Times* pointed out that a change was occurring in the relationships of various people in business and politics. It noted a "shift" from traditional power-oriented leadership to a new "Leadership by negotiation". SIMSOC, and other simulation games allow students an opportunity to try leadership and negotiating efforts guided by their courses in mathematics, drama, economics, English, literature, sociology, government, and group psychology.

Using the Teaching-Learning Center together with Simulation Games has, over the past four years, developed the core around which the community college has built a growing curriculum with which to serve individuals and groups who traditionally have not been served before by higher education. Simulations have provided flexible, innovative curricula for administering highly personalized approaches to the new student population of the '70's and beyond: particularly, those individuals for whom alternative modes of education are appropriate.

Yalta : A Simulation in International Relations

BY ANN KELLEHER

To make a representative political system viable in this increasingly interdependent world, there is a growing realization of the need for an enlightened citizenry. Of United States post-secondary educational institutions, it is community colleges that deal most directly with the general public. Therefore, they must shoulder a large part of the burden of creating a citizenry capable of making reasoned judgments about public issues. Based on this reasoning, community college faculty and administrators are increasingly recognizing that one of their educational priorities should be the dissemination of knowledge about international studies.

International studies may be defined as the nature, source and resolution of international conflict. Whether this definition is used or some other, there is general agreement that the international system is highly abstract and complex, consisting of many potentially confusing variables, and seemingly removed from our daily experiences. Consequently, international studies is difficult to teach even to students with a good educational background and highly motivated, which is not the case with many students at Bunker Hill Community College. The problem, then, was to locate a viable delivery system for international studies content material. Here the Learning Center's basic principles and methodology proved invaluable. (In this case, "Learning" in the designation "Learning Center" referred not only to students but also to faculty).

Three Basic Principles of Learning

The Learning Center delineates several basic principles of learning, three of which were applicable to the choice of an international studies methodology.

1. *Students possess a variety of learning styles*, a fact grossly overlooked in most classroom teaching. Three styles proved useful in designing international studies instruction. (These relate to Dale's Cone referred to earlier in this Handbook).

First, some students learn through the medium of *verbal symbols*. These are generally people who have been acclimated to the highly abstract, formal type of traditional classroom instruction which is based on advanced listening, reading and writing skills.

The second style is ***visual*** *experience*, which some students need to learn well. Other students better utilize the third style *hands-on-experience* which involves physical action to stimulate mental activity.

Many Bunker Hill students have not been successful in the formal educational setting which relies almost exclusively on the verbal medium. They have used the second and third learning styles to get through life thus far. Therefore, it makes sense to design a curriculum based as much as possible, at least initially, on visual and hands-on-experience.

2. *Students learn and retain more by doing*, a principle pertaining even to those successful with verbal symbols. This second principle of learning, involves situations when ideas, made applicable to an activity, are made useful. When learned material is put into practice it will become part of one's self-awareness and not remain simply an abstraction. This works not only in the technical areas of knowledge but in humanistic, liberal arts courses as well. For instance, content material is learned more thoroughly when one has the responsibility of explaining it to others.
3. *Students will be more highly motivated if they are given responsibility for their own learning*. This principle calls upon the teacher to develop a delivery system more creative than the prevalent lecture, note-taking, testing method. The student should be perceived in terms of a variety of possible behaviors and, therefore, as more than an inert, machine-like receptor of information.

Application of Principles

In light of the three learning principles explained here, international studies instruction at Bunker Hill has used the simulation methodology. A Yalta Conference simulation was chosen due to its proven utility and its case-study approach, which means it is less abstract than other types of international simulations. In the Yalta

simulation, students recreate the February, 1945, Yalta Conference, each student taking on the role of an individual negotiator present at the Conference. Three basic courses are tied into the simulation experience: Problems in International Relations, Psychology of Group Experience, and Communications II.

The simulation technique as implemented at Bunker Hill, is the primary focus for learning activity. This contrasts with the usual use of simulations as augmenting the points made in lecture. In the Yalta simulation, lecture-discussion sessions are complementary to the game and points made are based on what happened in the simulated Yalta Conference. This has two direct consequences: (1) It enables students to move from specifics to generalizations about the functioning of the international system in an experiential and less abstract way. (2) The focus is opposite from the usual one; it is on what the student does, not the teacher.

A useful way to explain specifically how each of the three learning principles was implemented in the Yalta simulation is to use the three principles as categories to describe what actually happened.

1. *The first principle described a variety of learning styles*. The simulation allowed visual and hands-on-experience. It made concrete and personal what seems impersonal, far-removed since it is international. The process of negotiation became part of the student's own experience.
2. *Learn and retain more by doing* constituted *the second principle* and here a generalized discussion of content material is appropriate. The student found out, (a) why nations perceive the same situation differently, (b) how many and what kinds of factors go into making international decisions, and (c) why it is difficult to reach agreement with other countries. To accomplish this, students utilized a large volume of historical material describing Europe in the Twentieth Century.
3. The Yalta simulation provided a twist to the *third principle*, that *motivation is positively correlated with responsibility*. The Yalta students were not only responsible to themselves but also to their peers. If they failed to do the research task assigned by their country (Great Britain, the United States or the Soviet Union), the whole team would be weakened when it came time to negotiate. Peer pressure replaced authoritative (superior-subordinate, teacher-student) pressure.

Again, to convey the points to be made in this section, it is useful to employ the three learning principles as organizational categories.

1. *First Principle*-Students lacking verbal skills and prior historical knowledge learned to verbalize complex ideas using a mass of specialized historical material. Through simulation, visual and hands-on-learning styles led to an increase in effectively using the verbal style.
2. *Second Principle*-There is a lack of hard data but, based on observation of student behavior, there was a definite increase in the volume of historical content learned and negotiating strategies became more sophisticated. Also, there was interest and knowledge in international issues exhibited by Yalta participants in succeeding semesters.
3. *Third Principle*-In contrast with the usual Bunker Hill grading pattern, only one " In Progress" grade has been given in three Yalta sections. Also contrasting with usual Bunker Hill student behavior, the Yalta students voluntarily imposed on themselves a large volume of difficult reading material. If the number of history textbooks, memoirs and specialized books used by Yalta students had been assigned by a teacher, the result would have been a mass classroom exodus. As another indication of student motivation, excitement and enthusiasm have become a "given" in Yalta sessions.

The conclusion to be drawn from the Yalta experience at Bunker Hill Community College is that a teacher should devote the same careful consideration to delivery system selection as is devoted to organization of content material. Generally, college teachers by training concern themselves only with course content.

CHAPTER VI

INTEGRATING MATHEMATICS

In 1973 when Bunker Hill Community College opened, several members of the Mathematics Department were the first to investigate the Learning Center concept and to incorporate its operation into their courses. Then, in 1974, under the leadership of Joan McGowan, Chairperson, the Mathematics Department expanded its offerings so that students could take most courses in any one of a large variety of delivery modes. At this point, the content of the various courses was matched to the objectives of the courses offered in the Learning Center and an Assistant Coordinator in mathematics was hired as a Learning Center full-time professional staff member to function as a liaison between the Mathematics Department and the Learning Center and to provide full mathematics resource in the Center, with a faculty member but also in a total Learning Center enrollment using the Learning Center staff in mathematics, tutors, and aides as needed. The Mathematics Faculty are the main resource.

The Learning Center established at Bunker Hill Community College is a delivery system for individualized, personalized curriculum based on mastery-level learning concepts.

It is a STRUCTURED, MONITORED, LEARNING EXPERIENCE using continuous enrollment, continuous progress schedules designed for each student in a framework which includes:

— careful diagnosis of each student's entering skills behavior,
— equally careful prescriptions of learning sequences which start where the student is and are sequenced to his final educational goal.
— identification of each student's preferred learning style based upon how he approaches the theoretical and qualitative aspects of deriving meaning, the developmental relationship pattern he uses as he derives knowledge, and the method of reasoning that he uses as he moves through any situation where he is required to learn something.

In essence, these first three steps put the student into a learning experience — one in which he starts at his entering behavioral skill level, which includes his preferred learning style, which determines

the mode of his learning sequences — and in combination, these determine his learning prescription in mastery level sequences until he reaches his educational goal. For example, in this system, a student who requires the traditional math course called Foundations of Math, would experience the following procedures:

Diagnostic Skills Testing in Math

— overview of math skills
— refinement of testing through addition, subtraction, multiplication and division as necessary.

Identification of his preferred learning style

— does he prefer to read or to listen?
— what is his personal commitment level and how does he feel about it?
— does he require an authority figure in his learning experience or, does he learn in a peer-group interaction situation, or, does he prefer an independent mode giving him access to structured resources but allowing him to decide what "expert" he will consult?
— what method of reasoning does he use? Does he reason in:
  - categories
  - relationships
  - comparison and contrasts
  - combinations of all three with the resulting learning "style" surfacing when faced with the problem of deriving meaning.

A Written learning sequence prescription which will involve individualized learning in a specific mode

— programmed instruction in math starting with division. The term programmed as in the BHCC Learning Center indicates a systematic development of planned application of learning principles, teaching, and media selection techniques towards the realization of behaviorally stated objectives.
— a "tracking" sequence through basic math so that he spends his time only in the subject area where he needs to.
— a full-teaching sequence in elementary algebra.

OR

— a reviewing, "tracking" device in elementary algebra — again where he works in learning material only where he needs to.

— a self-teaching sequence in intermediate algebra.
— a self-teaching introduction to trigonometry and geometry.

In approaching this, the student is *not* confronted with the denigrating concept of remedial work until he is "eligible" to do a course called "Foundations of Math." Rather, he starts work in math — WHERE HE IS — and continues in a self-paced, positively reinforcing learning experience until he reaches the content-goal specified as Math I. And he does this in a mode which supports the manner in which he learns most efficiently and effectively.

An important consideration here is that he experiences an educationally HONEST process in the mastery level concept of self, personalized instruction. He is not pushed into a statistical mold called "normal distribution" to determine his progress. Rather, at each step, he is exposed to mastery learning at a minimum of eighty percent. Until he reaches this level, he doesn't get pushed along cumulating his lack of knowledge with the resulting experience of failure. He does not compete with a group of students with different mastery level skills. He is not exposed to "tutoring" which may be unrelated to his educational need at any given time — i.e. working with algebraic equations when he doesn't know how to do fractions! He is not pushed along in a "social promotion" situation which can only result in failure-feedback at some future point in time!

To give you some idea how this has grown, the early Fall semester, 1978, enrollments in Mathematics in the Learning Center were as follows:

Five hundred eighty-three students were enrolled in mathematics in the Learning Center for a total of one thousand four hundred fifty hours. Of these figures, fifty-eight students were scheduled for one hundred seventy-five hours in our in-progress (IP) grades from the summer sessions. One hundred sixty-three students were scheduled for four hundred eighty-nine hours as direct enrollments in Learning Center courses. Three hundred sixty-two students were scheduled for seven hundred eighty-six hours in learning sequences offered by the Learning Center in association with Mathematics faculty members' courses.

Our association with the Mathematics Department has been very rewarding. They have contributed a great deal to the growth and success of the Center. As we mentioned earlier, much of the success

had been due to the leadership of its chairperson, Joan McGowan. Indeed, the "Mathaphobes" course was the result of having coffee with her in the Faculty lounge in 1973. Out of a rather rambling, general conversation, we began discussing our students' tremendous avoidance-behavior with regards to their mathematics requirement. This conversation resulted in a course called "Math for Mathaphobes" which would consist of three credits in Mathematics and three credits in Psychology. The course would be Team-Taught by McGowan and Tenore and would incorporate the Learning Center courses in the appropriate mathematics course and in the Principles of Psychology course.

We would meet with the students once a week in a two-hour block and the students would schedule three hours per week in Math and two hours per week in Psychology in the Learning Center's individualized learning sequences. We announced the course as Math for Mathaphobes and asked that only students who "hated, despised, feared, or had always failed math" enroll. There was no particular "advertising" of the course. However, it over-enrolled at approximately forty students and another twenty-five to thirty students were turned away.

At this time, our intent was quite broad. We wanted to:

- see what the population would be like in terms of age, sex, etc.
- do extensive basic skills testing
- attitude scales
- investigate preferred learning styles
- create a group-meeting atmosphere that would not produce anxiety or fear, but rather would facilitate positive feelings toward math
- use the Learning Center concept to place students at their entering skills level in the appropriate learning sequence and hopefully to insure success (hence positive reinforcement) in the mastery of the material that had somehow become a negative stimulus which caused the avoidance behavior.

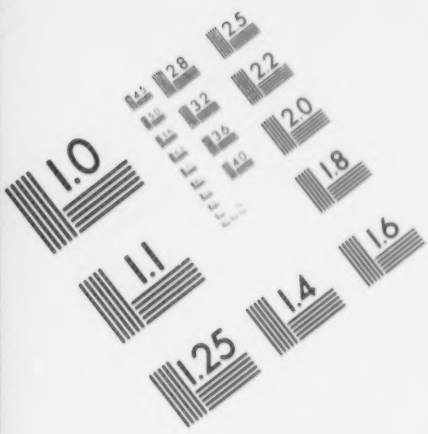
Obviously, this was a typical "shot-gun" approach. However, we had planned to use the classroom time in achievement motivation techniques and experiences, designed by Altschuler, and to give extensive feedback to students on test scores, especially their preferred learning style. We would further deal with implications of the scores, learning techniques, group support techniques, and the use of simulations and games in mathematics designed (by Joan McGowan) to create concrete experience for the students so that they could see the relationship to the abstract content of mathematics. We also were interested in presenting practical, every day applications of the mathematics content. Finally, we wanted to use ourselves as teachers in positive reinforcement procedures. To the degree possible, we wanted the classroom to function as a motivational technique.

Obviously in the past few years we have collected observations and data. We know, for example, that the population which has been described elsewhere is typical of the "disadvantaged" student. We also found that those students who completed the course demonstrated B grade level mastery or better and that they tended to take more mathematics courses than were required for their degree. (Students who did not complete the course also dropped out of the College.) Those students who transferred to four-year institutions reported that they were not "frightened" by the Mathematics Placement exam and that they felt comfortable that they placed where they should. This is a deliberately brief description because Professor McGowan has been organizing research formats and collecting hard data which will be completed and published at a later date. Our purpose here was to indicate various uses of the Learning Center concept in relationship to the Mathematics Department.

The Systems Approach in a Mathematics Department

BY JOAN MCGOWAN

At Bunker Hill Community College the Mathematics Department tries to meet the needs of the student by using the systems approach to instruction. We use a variety of teaching methods including lecture, self-pacing, mastery learning, programmed instruction, simulations, and tutoring. Indeed in a single course with several sections we may use all of these in various combinations. We do not unify the course by using a single text nor do we use department final exams. The unifying element in a course is the set of objectives behaviorally stated. An instructor can use any materials provided there are exams that test these objectives, an analysis of which ob-

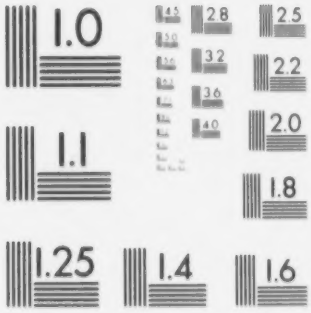


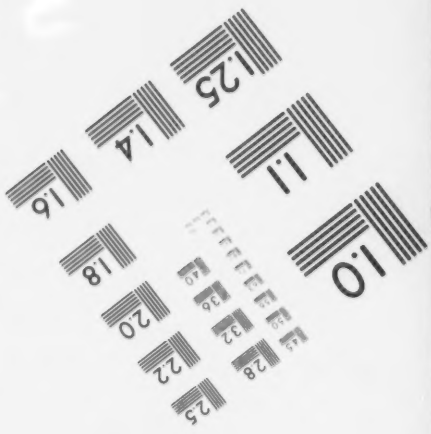
AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202





MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

jectives were met, and new approaches that will enable students to gain mastery of those objectives that have been missed.

The basic design of the department, therefore, can be defined as a systems approach, succinctly stated, as has already been mentioned before, by the Markle five step process, i. e. measurement:

1. measurement of entering behavior
2. behaviorally stated objectives
3. instructional materials
4. criterion referenced testing
5. validation.

Because the design is basic structure, it can be used regardless of teaching methodologies, student profile, or budget.

The first part of this paper outlines the five step process as used by the Mathematics Department at Bunker Hill Community College:

1. the Mathematics Placement exam
2. the defining of objectives for each course
3. the choosing of material used in each course
4. the testing that is used to measure objectives
5. the evaluation of learning objectives

The paper will conclude with a discussion of the implementation of two courses, Foundations of Mathematics and Calculus.

Our approach to the first step in the process - measurement of entering behavior - was to consider several items which are listed below as questions. I have in each question given the conclusion the department has reached.

1. What is the range of ability we wish to test? We needed to test for competency from addition of whole numbers to calculus.. We found that any such test would take at least three hours to administer and most of the test would be too advanced for most students. Thus we decided the content from arithmetic to intermediate algebra appropriate for about ninety-five percent of the students. The five percent who score very high would be eligible for trigonometry or calculus. We place these students according to past course work and then by testing in class.
2. What information do we wish to gather? Mathematics ability is not the only information that we need for placement. Some courses have the same prerequisite but are intended for different student needs. Thus we collect information on past work in math courses (which also helps to spot students who did not do well on the test but should have), academic program at the college, and future goals.
3. What is the validity of the exam and on what norms? We wanted to make sure that the test was appropriate for our students and normed on two-year college freshmen.
4. Who will give and correct the exam? We try to give the exam well before the term begins, usually during the summer. The Learning Center staff provides this service. Therefore, the exam has to be one that a nonmathematics staff member can handle.
5. Who will place the student? The Mathematics Department provides the basis for placement but the Learning Center staff actually does the placing before registration.
6. What are the time limitations? Since the students are tested in areas other than mathematics, we are limited to about one hour for our exam.
7. What funds are available? With limited funds we searched for a test that was not consumable except for inexpensive answer sheets.

At various times we have thought of designing our own test. However, the design and validation of such a test would be at least the equivalent of a full-time faculty member. Finally we decided on the mathematics test in the McGraw - Hill Basic Skills System. We are able to test arithmetic, introduction to algebra, and intermediate algebra.

Although there is a continuing search for new placement tests, we are pleased with the results we have obtained. Our students are able to work at levels in which they are placed. This can be measured by the fact that less than two percent of the students need to be reassigned after subsequent testing within the class.

The second of the five steps, that of defining objectives, was initially the hardest. However, once done, it's done for a long time except for minor changes. We formed committees for each course. The membership was made up of all faculty teaching the course in the present semester, the prior semester, and the upcoming semester.

The charge of each committee was to define the objectives for the course, search for instructional materials, and determine what measures were to be used for attainment of objectives. As long as the same objectives were taught and measured, variety in texts, materials, and delivery systems was encouraged.

The last step in the process, evaluation of student learning, is the most difficult on a continuing basis. Each faculty member evaluates the course by what number of students was able to attain what number of objectives. We also looked at our instruction by the number of times a student has had to retest in order to obtain mastery.

The first time through this process we changed almost every text we were using. We also had a better handle on what to look for in a new text. Each semester we have found more success in student learning. When our courses have problems, we do have the information to try to solve them.

On a final note I would like to say something about faculty evaluation. This five step process would fit very comfortably into management by objectives. In our department we set goals and faculty members set their own objectives within these. This does give us the direction for professional improvement. However, our college is part of a larger system that is in the process of faculty and staff unionization, and evaluation from above has changed from one semester to the next. Hopefully in the future we will be able to report the completion of the systems approach in our Mathematics Department.

The Start and the Finish

BY DOROTHY RYAN

The following sections describe the way in which the Learning Center is involved in what might be called our entering and exiting courses: Foundations of Mathematics, an arithmetic level course, and Calculus, presently our highest level offering. Both courses are structured for mastery learning using a Learning Center component; however, the way in which this component is integrated into each model is quite different.

The Start: Foundations of Mathematics

Foundations of Mathematics is one of our most heavily populated courses. Student enrollment in this course is based on results of the Mathematics Placement Examination. The student population has quite diverse mathematical abilities and aptitudes. There is very little that the students have in common other than a previous lack of success in their mathematical studies and, accompanying that, a shared lack of confidence in their abilities. We do, on occasion, meet a student who needs only a short review of the basic operations, but, for the most part, mastery of course content requires substantial student effort. The unevenness of both entering skills and learning rates of these students poses a problem to which individualized instruction provides a solution. Integration of a Learning Center and a classroom component has resulted in a learning situation which accommodates the needs of this heterogeneous student group.

The instructional model that I use is based on dividing a student's three contact hours a week between classroom (one hour) and Learning Center (two hours). Classroom time is used in three ways:

- To provide information about course logistics in a motivational setting
- To maintain a central meeting place for group interaction
- To work on course objectives which supplement or reinforce material covered in the Learning Center instructional program

The main group of specific course objectives is covered in the Learning Center using either one of two Audio-Tutorial programs:

Audio-Tutorial Basic Mathematics - An Individualized Approach by Joanna Burris (Publisher: Prindle, Weber and Schmidt)

Basic Math - An Individualized Course (Audio-Tutorial) by Bennie Wiley, Jr. (Publisher: Westinghouse Learning Press)

Both programs share the following features:

- The instructional medium consists of text material which has been written at a reasonable reading level and coupled with audio-tapes
- Pre-tests are used for diagnosis of entering skills in order to

set up individually prescribed sequences of learning activities

— The instructional program is broken down into about sixteen short modules to allow for frequent testing and the accompanying positive reinforcement

— The structure of the module tests allows for feedback to students concerning objectives which have not been completely mastered

— An end-of-program survey examination provides an overall evaluation of the student's mastery of material. This examination can also be used diagnostically to prescribe additional study in indicated areas.

The programs differ slightly in the nature of the topics covered and also in the level of dependence of text material upon audio-tapes. Students with reading problems will generally be able to use the ATBM program more easily since it requires comparatively less reading and more listening. On the other hand, the Westinghouse program provides a more complete text and allows more easily for student work outside of the Center.

In order to meet the objectives of the Foundations of Mathematics course, both programs require supplementation with other materials. This is easily done, however, either in the classroom or by using other Learning Center materials.

The result of this integration of classroom and Learning Center is a system which allows for individual differences in entering skills and learning abilities, while insuring individual and group interaction with the instructor.

The Finish: Calculus

At the other end of the mathematics offerings is the sequence of Calculus courses. These courses are usually elected by a small number of students. Offering both Calculus I and Calculus II as classroom courses each semester is generally not considered feasible for administrative reasons. However, using a design that incorporates the Learning Center allows for both courses to be combined as one instructional offering - and, as such, they are available to students each semester.

Students enrolled in these courses have fairly dependable backgrounds in algebra, geometry, and trigonometry. Supplementary work is recommended for any student who is deficient in these areas. The question to be resolved in this situation is not one associated with heterogeneous groups, but rather, how to use instructor time effectively in order to accommodate two, related, low enrollment courses.

One way, which I have found to be successful, uses a modified Westinghouse PLAN Calculus program. The logistics are described in the following paragraphs.

Each Calculus course is scheduled to meet four hours a week. The instructor's four hours are used in a different way from those of the students'.

The instructor's weekly schedule is:

Calculus I group: two classroom hours
Calculus II group: two classroom hours

The student's weekly schedule is:

Calculus I or II : appropriate two classroom hours
Learning Center: two hours

The instructor uses classroom meetings for orientation to the instructional program, presentation of course material, and for group discussion. The student uses Learning Center time for testing and for working with supplementary texts and audio-visual material.

This Calculus program is modularized. It allows for self-pacing and it requires mastery-level learning. It has now been in use for several years and has been received well by the students that it services. It provides a means of maintaining complete departmental offerings in an important area, for relatively small groups of students; at the same time it provides an instructor with a course that is both challenging and satisfying to teach.

CHAPTER VII

BEGINNING YOUR OWN CENTER

One of the major conflicts existing in education centers around the various methods of educational instruction. To be more specific, the conflict centers around which instructional method is the most successful in enhancing and producing successful learning. Evidence of this can be easily determined by skimming educational and psychological journals. Recently, however, the attention of some persons has turned to the area of "cognitive learning styles" in relation to various methods of instruction. In other words, which method does the individual student prefer? This thrust has given way to another view of educational instruction - namely, that one particular method of instruction might not be the significant factor to learning for all students, but rather, the individual student's cognitive learning style, paired with a *complementary* method of instruction, might be the significant factor to successful learning.

The outcomes of offering courses in all cognitive learning style modes are three:

1. true individualization results, as each student may have a course load composed of courses offered in various instructional modes which meet his individual preference learning styles.
2. the student, rather than the modes of instruction, is the focal point of attention.
3. all modes of instruction are offered without institutional preference of one mode over another. This tends to produce a very eclectic approach to education which incorporates the various educational philosophies of Dewey, the Behaviorists, the Cognitive Field Theorists, Bloom's Mastery Learning, Traditional Education, and so on.

As impossible as the accommodation of various cognitive learning styles may seem, a college should make an attempt to be successful at this concept by building its college environment around a Learning Center - which is a totally individualized model - for delivering instruction.

As mentioned previously, it should be a:

STRUCTURED, MONITORED, LEARNING EXPERIENCE

using continuous enrollment, continuous progress schedules designed for each student in a framework which includes:

- careful diagnosis of each student's entering skills behavior,
- equally careful prescriptions of learning sequences which start where the student is and are sequenced to his final educational goal,
- identification of each student's preferred learning style based upon how he approaches the theoretical and qualitative aspects of deriving meaning, the developmental relationship pattern he uses as he derives knowledge, and the method of reasoning that he uses as he moves through any situation where he is required to learn something.

INTRODUCTION TO NEEDS ASSESSMENT

Interviews with various members of the staff and administrators at an institution should indicate to a task force what the needs of the school are: for example, it might be found that there is a need to expand methods of instruction; to increase preferred learning styles; to allow students and teachers to choose alternative methods of instruction; to individualize programs; and to expand areas of course instruction that offer intensive study in developmental, supplemental, and advanced materials on an individualized basis. The committee should then establish a general direction based around suggesting a concept of learning that establishes a center for developing independent learning skills that foster security and initiative in handling new ideas, and that enhance self-teaching and self-improvement.

Further discussions with Task Force members and other faculty may indicate that there are immediate needs in other areas.

ADMINISTRATIVE SUPPORT

Administrative support of new ventures is mandatory to the success of such projects. It is strongly advisable to obtain such support before attempting to make serious changes in the way curriculum is delivered. Beyond that, much faculty development is needed to get not only support for the project, but also to familiarize those who will utilize the Center with the processes and procedures for implementing new programs in the various disciplines.

FUNDING

Once a needs assessment has been established, and administrative and faculty support gathered, the next problem is to get the Center funded. This can be done in a number of ways: Government grants, budget allotments from the general fund, special funding for that purpose only, or the surplus from continuing education. In any case, funding, once established, should be permanent and capable of expansion. Small Satellite Centers can be established for as little as $50,000. The initial Center at BHCC was originally put in place for just under $ 80,000.

HARDWARE AND SOFTWARE

What is purchased in the way of hardware (equipment) and software (books, etc.) is generally based on the original needs assessment. Usually a good cross section of validated materials in all disciplines at all levels is the place to begin. It is important that a newly established Center not be identified as a "remedial" offering. The reasons for this are obvious. If the Center is known as a "dumping ground" for all the "dummies" then you will never get the full utilization of students at all levels of accomplishment from remedial so-called, to enrichment. Remember, true individualized instruction means that all students begin at their entering-level of ability, wherever that may be. Students working in the Center should not be aware of what the others are doing or at what level. The process should be continuous and, if possible, self-paced so that those who learn at different rates can move along in a program at that rate.

The reading levels of software are also important. At the community college, reading levels often fall as low as the first and second percentile. There are also levels that rise well above the ninetieth level of readability. Programs must meet the demands of these various levels. In English, for example, there are several programs all of which cover the same basic objectives, but which are written at different reading levels.

Whenever possible, faculty should be instrumental in choosing their own materials, but the Center staff should make sure that such chosen materials have been validated and tested before a purchase is made.

The validation process is essential. One system for determining program validation is to write to the publisher for the performance data. If none is forthcoming you can generally assume that it has not been done. The validation process is expensive and many companies who publish programs do not want to go to the cost of the several years of study which comprise such a process. Some, like the Westinghouse Learning Corporation, often have gone to this extra expense and the programs are usually "debugged" for the populations that they are intended to serve.*

PERSONNEL

Funding costs must also include those who will administer and operate the Center. The numbers of personnel are again up to the findings of the initial needs assessment, and are based on how many students you will be serving. The initial Center at BHCC was operated by one half-time Director, one Coordinator, one Staff Assistant, and two work-study students. With that personnel and a well-developed system, utilization for the 1974-75 year was as follows:

Sample of Learning Center Monthly Activities
Learning Center Monthly Report for May, 1975.
June 3, 1975

PART I: LEARNING CENTER ACTIVITIES

Tests Administered:

228 Basic Skills Math tests	228 hrs.
25 California Achievement (Reading) tests	25 hrs.
23 California Achievement (Language) tests	23 hrs.
23 California Achievement (Math) tests	23 hrs.
10 Basic Skills Reading tests	15 hrs.
10 Basic Skills Study Skills tests	10 hrs.
8 Basic Skills Writing tests	8 hrs.
8 Nelson Denny Reading tests	8 hrs.
6 Basic Skills Spelling tests	3 hrs.
6 Basic Skills Vocabulary tests	3 hrs.
3 English as 2nd Language tests	9 hrs.
2 ASMD Diagnostic tests	2 hrs.
1 English 2600 Diagnostic tests	1 hrs.
353 tests administered	358 hrs.

* Hardware and Software material lists and costs are available upon request, from the authors.

The above tests include diagnostic testing done for the incoming nuclear medical and radiological technician students, and math placement testing for all incoming freshmen.

---

36 Orientations to specific programs in the Learning Center — 36 hrs.

Learning Center Student Enrollment: 1284 students.

A. Total Enrollment: 1284 students

214 students are in the "Prescriptions Received" category. These students were awaiting some type of processing which may involve the scheduling of programs, diagnostic testing, etc.

36 students became active during the month of May.

52 students were active from previous months.

654 students completed their programs and became inactive.

27 students were dropped from their programs and became inactive. In all cases, this was due to excessive absences.

5 students withdrew from their programs. In all cases, the withdrawals were for personal reasons.

305 students were placed in a "Hold for Completion" category. This category includes those students who did not complete their programs, but have stated intentions to complete.

Those students in "Prescriptions Received", complete inactive, withdrawn inactive, dropped inactive, and "Hold for Completion" categories, have been placed into inactive files as of May 31, so that we may begin new and accurate files for the summer session. This is done at the end of every semester. Any student placed in this category is then reactivated when he comes in to continue an unfinished program or to begin a new program.

B. Day School: 1106 students

166 students were in the "Prescriptions Received" category.

21 students became active during the month of May.

33 students were active from previous months.

607 students completed their programs and became inactive.

22 students were dropped from their programs and became inactive.

4 students withdrew from their programs and became inactive.

250 students were placed in the "Hold for Completion" category.

C. Continuing Education: 178 students.

43 students were in the "Prescriptions Received" category.

12 students became active during the month of May.

19 students were active from previous months.

38 students completed their programs and became inactive.

5 students were dropped from their programs and became inactive.

1 student withdrew and became inactive.

55 students were placed in the "Hold for Completion" category.

PART II: LEARNING CENTER UTILIZATION

During the month of May, the Learning Center was open for a total of 21 days or 217.5 hours. During the month of May, there was one holiday on which the school did not hold classes. It should be noted in the figures below, that the number of unscheduled sessions was unusually high in comparison to the number of scheduled sessions attended. In general, this was due to a high number of students coming in off schedule to complete programs before grades were submitted. This also had a tendency to inflate our absence rate.

Learning Center utilization for the month of May was as follows:

1736 total sessions were scheduled for 1864 hours.

1082 total scheduled sessions were attended for 1045 hours.

681 total scheduled sessions were missed for 819 hours.

1184 total unscheduled sessions were attended for 1628 hours.

Therefore:

2266 total sessions were attended for 2673 hours.

And:

681 total sessions were missed for 819 hours.

This indicates that the Learning Center operated with a 61% rate of attendance and a 39% rate of absence.

Brief 1974-1975 summary of Learning Center utilization. It will be expanded fully in mid-June.

Learning Center Enrollment

Month	Day School	Cont. Ed.	Total
September	1120 students	67 students	1187 students
October	1233	85	1318
November	1291	79	1370
December	1116	79	1195
January	1023	85	1108
February	1283	133	1416
March	1261	155	1416
April	1220	169	1389
May	1106	178	1284
Average per month	1184	114	1298

Learning Center Utilization:

38,780 total sessions scheduled for 42,695 hours.
27,390 total scheduled sessions attended for 29,842 hours
11,390 total scheduled sessions missed for 12,853 hours.
6,506 total unscheduled sessions attended for 7,215 hours.

Therefore:

33,896 total sessions attended for 37,057 hours.

And:

11,390 total sessions missed for 12,853 hours.

This indicates that the Learning Center operated during the 1974-1975 academic year with a 71% rate of attendance and a 29% rate of absence.

Essentially, the Center in 1975 served over 1184 students each month for a total of 38,780 sessions for 42,695 hours with two professionals and one non-professional staff, plus a variety of work-study students. In 1978 the numbers have more than doubled but there has only been added one more professional and two more non-professionals. In January of 1979 the new Center will open, increasing utilization space by more than triple what it is now. At the present time there are no plans to increase the staff because of severe State budgetary problems.

The Coordinator is the principal administrative and planning officer responsible for management of all areas designated as part of

the Learning Center, as well as administrator and supervisor of the self instructional, self-paced and non-print learning sequences offered to students on a developmental, supplemental, and enrichment basis. He or she is responsible for the successful management of all areas designated as part of the Learning Center and for the implementation of procedures that provide for maximum use of the resources. The Coordinator has the specific duty of establishing policies that coordinate the service functions of the Learning Center with the requirements of the college or high school community's entire instructional program.

Coordinator is responsible for:

1. An inservice training program to bring about an effective utilization of all types of Learning Center resources.
2. Development of effective procedures for the evaluation and selection of book and non-book media and equipment.
3. Preparation of the Learning Center's year plan objective budget.
4. Development of a program to train staff in all areas of Learning Center operation.
5. Continuous evaluation of the Learning Center programs based on the philosophy and objectives of the school.
6. Assistance with the Learning Center's in-service program relative to the Learning Center service.
7. Development of effective procedures for the evaluation, selection, implementation of Learning Center instructional material.
8. Direct supervision and coordination of the study and system facilities: Learning Center proper - "dry" and "wet" areas, small group areas and projected satellite centers. Besides acquainting students and faculty with the services and functions, the Coordinator and staff will administer, assign, diagnose, prescribe, schedule, and monitor the student activities in the facility.
9. Collaboration with other learning resource functions in the implementation of instructional systems, administration of such systems, and the validation of the system implemented.

Duties of the Staff Assistant:

1. Orient student.

a. Review program subject matter coverage and time requirements.
b. Set fees and process fee schedule card if necessary.
c. Assign study space according to schedule card if required.
d. Initiate records.
e. Orient the student toward individualized instruction, the staff's role, and the program.

2. Insure adequate study environment for students.
   a. Maintain neat and properly equipped carrels.
   b. Keep order and discipline.
   c. Maintain staff/student rapport.
3. Monitor student performance in the program.
   a. Monitor student work record.
   b. Review students test performance.
   c. Regularly interview student as to his progress, problems, etc.
4. Locate, make available, and replace equipment and materials in neat and orderly appearance and secure all spaces and equipment at close of business.
5. Facilitate learning and maintain interaction with the program by solving problems, clarifying work procedures, etc.
6. Maintain student records and collect and arrange data for production of the monthly reports.
7. Serve the students by being responsive to their needs and meeting them as far as possible and within the limits imposed by the Learning Center.
8. Select and complete projects necessary for Center administration.

FACULTY ORIENTATION TO THE CENTER

Faculty workshops and orientation to the Center should consist of an in-depth explanation of the following:

THEORETICAL BASIS of the educational systems design approach and its relationship with learning theory.

SELECTION PROCESS of existent commercially produced materials including resources and bibliographies.

IMPLEMENTATION procedures for materials.

Set-up of various DELIVERY SYSTEMS with emphasis on the Bunker Hill Community College Learning Center model.

ROLE OF THE TEACHER as subject matter expert, prescriber, facilitator, evaluator.

Plus the following selected films:

1. The Bunker Hill Community College *Introductory Film on Programmed Individualized Self-Paced Learning.*
2. *Learning.* A survey of learning theory. CRM, Palo Alto, Ca.
3. *The Eye of the Learner.* A film which shows individualized instruction at work in the elementary school. Ralph Lopatin Productions, Philadelphia, Pa.
4. *Programing is a Process.* Susan Markle & Philip Tiemann, Office of Instructional Resources: University of Chicago at Chicago Circle, Chicago, Ill.
5. *A Viewer's Guide to a Series of Filmstrip-Audio-Tape Programs.* Fifteen modules which give the philosophical basis for individualized instruction. VIMSET Associates, Los Angeles, Ca.
6. *The Sensory World.* A film depicting the learning process through the five senses. Argus Communications, Chicago, Ill.
7. *Individualized Instruction.* Ten filmstrips which illustrate the methods of approaching individualized instruction. Educational Technology Publications, Englewood Cliffs, N.J.

A careful explanation of how a Learning Center works and why it is mandatory. The following is an example of such an explanation which is used with students:

The Learning Center is designed to assist students with their regular courses of study and to promote the pursuit of additional intellectual interests.

The Center provides a complete spectrum of specialized study facilities available to all students.

Services of the Center support the requirements of both faculty and students, and consist of individualized instruction presented in a variety of delivery modes.

The individualized program of the Center can be described as learning packages, teaching devices, learning kits, educational instruments, or programmed instruction. The goal of these educational activities is to facilitate a change in behavior through a systematic procedure, which provides opportunities for success in independent learning.

INDIVIDUALIZED INSTRUCTION

In technical terminology, individualized instruction is a teaching instrument whose objective is to shape or change behavior towards specific goals. This change in behavior is called learning.

In practical terms, it is a method of teaching without the teacher's presence. Essentially, it is a systematic approach to self-instruction which may have four special characteristics:

1. *active responding*: in addition to reading or listening or viewing materials, you will be solving problems, answering questions, or completing statements in a sequence of steps.
2. *immediate confirmation*: you see directly after making your response whether it is correct. Knowing that a response is correct helps you. If your response is not correct, you can review and immediately correct yourerror. Correct responses enhance learning.
3. *steps* which are *carefully sequenced*: steps that let you work through the material with a minimum of errors. These sequential steps lead you from material that is familiar to you, into
4. *self-pacing*: you proceed entirely at your own pace - another factor that aids learning.

These four characteristics, effectively combined, result in a highly efficient teaching approach: individualized instruction.

Individualized study is available to provide for three distinct needs: *enrichment*, *supplementary*, and *developmental*. Sometimes the student may recognize his own needs; at other times an instructor, an advisor, or an administrator may assist the student in identifying his needs.

Programs may be used by students who seek *enrichment* that is purely based upon their own interests. These areas need not be connected to course work. However, the student may also elect to use Center programs of study in the enrichment mode for a multiplicity of motives such as to prepare for CLEP (College Level Examination Program) testing to bypass standard course requirements.

The student may also use the Center programs to *supplement* regular course work: to cover materials which may be dealt with briefly or not at all in class.

When difficulty arises with a course or deficiencies threaten to result in low achievement, a student may use a program for *developmental* work. Programs for developmental needs are offered in various areas.

The Center extends to students the advantage of taking the instruction under supervised conditions. Center staff is always in attendance *to guide* students in taking programs as well as to help them maintain records of their performance and achievement. Since we stress this interactive model, we do *not* loan programs that are based in the Center.

ATTENDANCE

Certain formal requirements exist in any learning situation, and the one at the Center is no exception. Keeping a regular schedule helps students to learn more effectively. Thus, attendance at *self-selected* scheduled time is a significant requirement. In addition, when reserved space and material are scheduled, you help avoid letting another student go needlessly unserved.

Sometimes absence may be unavoidable. In that case, we urge the student to arrange for make-up sessions to maintain a learning pattern; never feel a schedule is unchangeable.

Students may choose a schedule within the limitations set by space and number of available programs. Students will be asked to formally schedule at least three one-hour sessions per week. It is questionable whether they can benefit from fewer than this number of sessions.

TESTING

Since the Center's main objective is to individualize a learning experience, we recognize the need to personalize it with regard to each individual's *preferred learning style*. Consequently, we request that all students using the Center take a self-perception inventory which helps prescribe programs based on the student's preferred pattern.

A student's learning style includes his interaction with his entire environment - how he searches for meaning. A learning style profile provides awareness of the various ways in which one goes about

learning. Life experiences, personal motivation, family background, all contribute to our uniqueness. Consequently, each profile is different in that it provides a composite picture of the many different ways that any person becomes informed. Does he listen or read? What sensory input does he accept? What cultural forces influence him when he makes decisions? How does he reason? The elements that comprise a profile are not fixed. Using a student's existing strengths, we can augment other elements in his learning style. This identification supplies a basis for individualizing instruction and allows us to prescribe highly personalized learning sequences.

In addition, evaluating performance is an integral part of any learning experience. A common and efficient way to evaluate is with tests. Tests can serve various functions. Following is an explanation of the kinds of tests used at the Learning Center.

The first program-oriented test you may be asked to take will help us to evaluate whether you need a particular program. Perhaps the test will indicate that you need only part of a program. In other words, the function of this test is *to diagnose*. We call it a *Preprogram Test*.

Preunit Tests may be administered before each program unit. If your score indicates sufficient knowledge of the subject matter in that particular unit, you may bypass the unit. Lower scores indicate you need the unit. If your score is above the minimum score required to skip the unit, but you feel uncertain about the material, you may take the unit anyway. In fact, you may elect to take any unit and skip the Preunit Test.

Most students benefit from knowing how they are progressing, and thus some authors have included *Progress Quizzes* in their program. You will administer these tests to yourself at specified points in the program sequence. The results are used only by you to evaluate your own performance.

A *Postunit Test* may be administered at the end of each unit. This test measures achievement for a longer segment of the program and is usually administered by the Center Staff. The questions are usually keyed to the program so that you can quickly determine the parts you should review. We strongly urge you to check any incorrect answers until you know why you made the incorrect response.

When students have finished the program, a *Postprogram Test* may be administered to check on overall achievement. If the student is taking a course through the Center for academic credit, or in connection with a course and expects to receive credit, then a grade will be determined from the score on the Postprogram Test. In the event that the student should not have achieved a passing grade, he may restudy the entire program or any portion of it and retest.

A *Criterion Test* may be administered after the student has studied a program. This is a standardized test that allows a comparison of score to nationwide averages. In many cases, this test will indicate how well the student applied the material learned to a different context.

The student should take all Postunit tests immediately after completing the material on which he was tested. In the lapse of time between studying and testing, forgetting may take place. Of course, while taking tests, students should refrain from consulting individualized instruction material, notes, or other material which would impair the accuracy of such evaluation.

RECORDS

Just as teachers continually seek to improve their methods of teaching, we seek to improve the personalized instruction programs we use. To help determine the need for improvement, we have to know about particular experience with the program. Record cards are our main source of information. We cannot overemphasize the importance of maintaining faithful and accurate records. Keeping these records is up to the student. They are not at all complicated to keep.

Students will be asked to use a session record card to record day-to-day performance during a specific learning course. Some of the data are to satisfy certain bookkeeping requirements while other data are for evaluation purposes. The latter also allow checking student progress in the program.

We use *Response Sheets* for one very important reason: *so the student does not mark the material when written responses are required*. Thus, a single copy of the program can be used more than once. This procedure is a saving to the student, because otherwise the student would have to buy his/her own materials.

The Session Record Card is a summary of work. The value of the entries will become more and more apparent as students work through the program.

If you are taking the program in conjunction with a regular course, try to relate your study to your textbook or classroom study. The program may differ in sequence and/or approach: repetition and seeing a subject from various points of view help you to learn.

Your professors and advisors are interested in your work and you should keep them informed of your progress as you work with the program. The Center will always notify the person who referred you, especially if you request this service.

In summary, remember that the Learning Center offers personalized, self-instructional programs in enrichment, supplementary, and developmental areas on an academic credit, grade credit, and non-credit-certificate-issue basis.

CHAPTER VIII

GETTING THE FACULTY INVOLVED

BY ANN KELLEHER

Once an institutional commitment has been made to establish a Learning Center with the educational philosophy and methodology described in this Handbook, the problem arises as to how to stimulate existing faculty to use it. An idea is only as good as its implementation and, unless an educational institution is newly established or has an inordinate amount of financial and human resources to commit to faculty development, the need exists to use existing faculty to carry out Learning Center principles. More than likely, faculty are presently using the lecture-notetaking method and will have to undertake the painful process of reevaluating and restructuring their courses. If many existing faculty do not utilize the Learning Center as intended, it will become a small enclave functioning self-consciously amid a sea of traditionalism and not be an integral part of the institution's total educational process. Consequently, its impact will be limited.

Some clues as to how faculty can be encouraged to adopt Learning Center principles are provided by a project run on behalf of the Massachusetts Community College Consortium for International Studies. Project activities include a series of workshops in which participating faculty write international studies material for their courses using programmed instructional techniques. Participants have been drawn from such varying institutional settings as rural Berkshire Community College, suburban Massachusetts Bay Community College, and urban Roxbury Community College. All academic disciplines offered by the Massachusetts Community College system have been represented from Allied Health and Secretarial programs to History and Literature. Many participating faculty had never heard of a behavioral objective and of those who were familiar with this approach, several had previously resisted incorporating it into their courses.

What workshop participants found was the need to rethink their course content in terms of student behavior to determine exactly

what knowledge, skills and attitudes constituted their instructional goals. In many cases this led to consideration of alternatives to lecturing as the means of delivering course content. When objectives were explicitly stated in a behavioral manner, the instructor's imagination was inspired to devise various student activities to enable them to master the objectives. A consensus formed concerning old methods of course development; when a course is taught with vague and implied objectives using lectures and note-taking, then it is easy, too easy, to rehash old material in the same way. Even new material is delivered by lecture. Faculty become deadened by this sameness but it is not altogether their fault. The lesson taught by graduate schools is that lecturing is what teachers are supposed to do. Graduate schools are good at imparting information, bad at teaching people how to teach, or learn for that matter.

This is not meant to be a blanket indictment of lecturing as such. Telling people what you want them to know is a most efficient (cost-effective) delivery system when students have the requisite entry skills. It is meant to be sharply critical of lectures that give no direction to the student and therefore assume he can and will sift through the welter of information, all seemingly equal in importance and perform the mental analytical-synthetic juggling act necessary to pass a test. It is also meant to state that some skills and attitudes are better learned through teaching-learning activities other than lecturing, like role-play and simulation for example.

A specific example of what one faculty member learned through workshop participation illustrates the discoveries that Learning Center principles can elicit. A fine arts course entitled "Movies of the War Years" was contemplated covering technical aspects of film-making as well as comparative cultural values reflected in film. When the teacher creating this course approached it behaviorally, she realized that some of the student skills she wanted developed would be useful in many of life's situations: for instance, observing how the director sets up a scene to evoke a particular audience response can be related to observing how a meeting can be arranged to stimulate preplanned outcomes or how to conduct oneself at a job interview. Therefore, generalized observation skills became the focus of instruction. This faculty member would not have

made observation skills one of her teaching objectives if she had prepared her course in the traditional manner, preparing lectures on the craft of filmmaking. The relation of filmmaking to real life may have been implied but would not have become explicit and so most students would not have learned a valuable lesson.

In designing specific program activities to train faculty in programmed instruction, several useful points can be made based on Massachusetts Community College workshop experiences.

1. Provide enough experienced programmers, preferably peers, to *work directly with faculty* on a person-to-person basis. Perhaps the single most important planning decision was hiring faculty as consultants who had written their own courses in a behavioral mode. These consultants worked individually with workshop participants. Such head-to-head interaction resulted in clearer participant understanding and more focused implementation of Learning Center principles. What was initially confusing became clear when worked out with an experienced and enthusiastic peer. When programmed instruction principles were first presented, it was evident from participant behavior that, left alone with no individual guidance, vague and non-behavioral objectives would have been produced. It is important to emphasize the efficacy of using peers to avoid the appearance of condescension or imposition of authoritative force. Of all social groups, college faculty seem especially sensitive to being "talked down to" and being told what to do.
2. Faculty are more likely to use instructional materials they themselves produce than materials produced for them. Such "*domestic production*" does not lead to ideal course development, but what is lost in academic rigor and tightly-knit methodological design is more than balanced by actual and enthusiastic use of new course material.
3. Assume *faculty are reasonable people* and will adopt principles and techniques of proven utility if such utility is clearly demonstrated. Therefore, workshops should impart substantive, useful information through activities directly related to teaching. This necessitates a great deal of specific planning in workshop preparation, thereby leaving as little as possible to chance learning. Programmed instruction principles should be used in

planning workshops as well as in developing courses. Information should not be randomly scattered in the hope that it will take root in faculty minds and bear fruit in faculty output. Workshop objectives should be behaviorally stated in advance and activities planned to enable participating faculty to master the stated objectives. Faculty respond favorably to such workshop organization and do not complain they are too "programmed" and not able to exercise their own individuality.

To summarize the message offered by this book, instructional problems often are not attributable to a weak faculty or to student deficiencies. Problems arise because the system used to deliver information and develop skills and attitudes does not fit student needs. When faculty discover this, defeatism is replaced with a revived enthusiasm.

CHAPTER IX

MARKETING ADULT EDUCATION THROUGH THE USE OF INDIVIDUALIZED INSTRUCTION: A VIEW FROM CONTINUING EDUCATION

BY R. BRENT BONAR

"Time was" when continuing education served as the replica of day colleges, offering the same credit courses, with the same faculty. Semesters began in September and January and were identical in length to the day school. Adults were forced to proceed with their education in a format and time-frame identical to that created for students straight out of high school, with part-time or no work to infringe upon their study time. This earlier form of continuing education, still practiced in many institutions, responded to the need to simplify the administrator's and faculty's scheduling.

Obviously, what was missing in this form of continuing education was the lack of recognition of the adult as a learner, as a consumer, with particular needs derived from a complex daily living pattern which might include parenting, taking care of the home, working a full-time job, etc.

Therefore in order to encourage increasing numbers of evening/adult students in the competitive higher education world of the seventies, a new marketing strategy became necessary — one which involved assessing adult student needs and providing a format of college courses which would satisfy their personal and social needs. To that end, we have witnessed within the past few years an increasing number of learning alternatives, which make use of modern technology to create an open learning environment. These alternatives include the telecourse, which is offered over open-circuit television; the radio course, which is especially popular in rural areas; the newspaper course, in which articles printed in local papers are coordinated with on-campus seminars and exams; the contract course, where adults pursue a particular area under a contractual arrangement with a faculty member; CLEP and other examinations which measure life experience in terms of college credit; and finally, the Learning Center.

The Center

The Learning Center, as has already been discussed in this book, is a delivery system for offering individualized, personalized curriculum. It extends far beyond the concept of a Learning Resource Center which consists of library, audio-visual materials, and media production facilities. The Center, at BHCC, is a structured, monitored learning experience, using continuous enrollment and continuous progress, through set developmental and college credit courses. Course materials found within the Learning Center are modularized so that a student can progress, on a unit by unit basis, accruing successful completion of the course in an undefined period of time.

What this means for the Continuing Education program is a vehicle which eliminates the barrier of time, and time is so crucial to the adult learner. We often find, here at Bunker Hill Community College, that adults will decide throughout the year on which particular day they want to begin a college course. We don't have to tell them to wait until September or January or June; we invite them to come in immediately, assist them, give counseling help if needed, and register them for a developmental, GED, or college courses that day. In terms of motivation, it allows the student to capitalize upon a recent decision; in terms of marketing, it provides continuing education - a means of meeting the student's educational needs as they occur.

Over the past five years, the Continuing Education program at Bunker Hill Community College has registered over three thousand three hundred students in the Learning Center. These students would not have been able to take college courses without the flexibility afforded by the Center.

We have also "tailor-made" programs for many social agencies who need training in specific skill areas. For example, in addition to offering self-contained educational units, the Learning Center is also able to test, say, twenty students in English Writing Skills, and develop twenty different writing programs, each of which meets each member of the groups' needs. From a fiscal point of view, we would never have been able to offer this program were we to rely upon hiring the necessary staff and tutorial support to make this program work. Thus in all areas—The Learning Center,

as an adult educational process, has been most successful for the Continuing Education program. It provides us with a cost-effective way to reach people whose schedule is united, it serves as a recruitment vehicle to reach new populations, and it allows for a varied approach for traditional programs to meet all students' needs.

The Expanded Study Program

The Continuing Education division has also expanded the Learning Center operation to include home study courses, which decentralize the educational process to allow people to study where they live. This program, called the External Study Program, ESP, was designed to help people with a full schedule; those who couldn't afford the time for weekly meetings on campus, or those who for social or physical reasons could not attend college on a regular basis. We have registered over five hundred students in courses as diverse as ESP Foundations of Algebra, ESP Principles of Psychology, ESP Communications who have, with the help of a faculty advisor, successfully completed courses, meeting faculty only twice during the completion of their course. Thirty-five inmates of a maximum security prison were among a group taking a Business Math course, which they completed, with the alternate assistance of letters sent back and forth between the inmates and the faculty facilitator.

In the future, there will be even further decentralization of education, and as part of that, a type of "Moving College"—perhaps an outfitted van, which can go from area to area, filled with prepared material and a minimal amount of hardware. Not unlike the mobile lending libraries, the van would be routed to elderly housing projects, hospitals, business and social agencies, where clusters of people interested in pursuing skill and academic courses could "sign out" units to work on over the week. On a regular basis, facilitators representing major disciplines would be available for seminars and tutorial assistance.

As the national trend toward decentralization occurs, the Tenore designed Learning Center as a practical mobile learning unit will be a major force in continuing education, as well as in other segments of higher education.

Interlock: An Alternate Model for Curricula Development

At the present time, in order to bring about curricula development in the Massachusetts Community College system it is necessary to go through a series of hoop-jumping exercises. A college wishing to present a new Certificate or Associate Degree program must first seek approval to offer such a program from its local curriculum committee and/or academic senate. Currently, a variety of activities must next take place at the system-wide level: a Stage I document, approval to plan; a Stage II document, the program proposal; and finally, a Stage III document, for operational approval to begin the program, each of which documents must pass through multiple screenings: first by the curriculum committee of the Board of Higher Education itself.

These stages for approval are to assure the degree-granting authorities that the courses in the program meet appropriate guidelines; that the degree program itself is sound; and that the program will train students to meet requirements for career openings or provide easy access to upper-level programs in a transfer institution.

The entire process for new degree programs takes a minimum of one year to complete, most of which is spent processing necessary papers. Added to this is the time necessary for the recruitment of students, as well as for the ritual survey of local, state, and national data regarding both manpower needs and curriculum format. Equally disconcerting as this length of time is the basic assumption that community colleges can offer only two types of programs: a full-year certificate program or a two-year Associate Degree program. The end result in most cases is a two-year Associate Degree which becomes a formalized program, rarely modified in any significant way, rarely redefined in terms of changing manpower skill needs, and almost never dropped from college offerings. It becomes, therefore, an institutionalized sequence of courses which all students in the program must take, irrespective of the students' life experiences or changing job openings. In some cases these Associate Degree programs have options: an alternate sequence of second year courses which also leads to an Associate Degree.

Most important is the central concept which the community college holds of itself: that it is responsive to the community, that it wants to "meet people's needs," and that the most appropriate way to achieve this is through either a one-year certificate program or a two-year Associate Degree program. The degree becomes, in fact, the educationally valid measure by which the college achieves its status: i.e., the number of students admitted to each degree program each year, the number of graduates from each degree program, and the number of transfer students from each degree program. The college thus assumes that the two-year degree program is the measure of achievement for *all* of its students, and that a partial completion of the program reflects a failure on the part of the student or the college to meet its basic objectives. Overlooked is the fact that not to complete a program can often mean that the student may have already reached a personal objective. For example, they may find jobs in which they can use the skills and knowledge learned at the community college; and they become successful in their jobs also because of the skills or knowledge learned. These students, then, may not be failures, or drop-outs, but rather they may be seen as "leavers" - people who leave in order to work, or they may eventually be seen as "returners", people returning to the college to learn additional skills or knowledge for job advancement.

The designing or redesigning of community college curricula in order to "meet the needs" of the total community to plan curricula should be made with the expectation that many members of the community will be "leavers" (note the "failure rate" of community colleges) and in the likelihood that some of the "leavers" will be "returners." Designing a new curriculum or redesigning existing curricula would attempt to provide the following possibilities for each new student:

1. Short-term, or semester length courses based upon skills or defined bodies of knowledge (i.e. accounting, typing, languages, medical terminology, etc.)
2. The interlocking of such courses in unusual ways in order to train for a variety of careers and a variety of levels in these careers (i.e. medical terminology and business management; art and writing; human growth and development and juvenile offenders; gerontology and drama.)

3. The "credit worth" of such courses towards an Associate Degree, either at present, or in the future.
4. Finally, the component based Associate Degree.

Achieving a variety or sequence of experiences becomes necessary in light of any future curriculum planning — note the rapidly shifting job market, the increase in new careers, the advent of new human services, and the decline or elimination of traditional jobs. Our responsiveness to this should be the partial movement away from the solid, defined two-year, 60 ' credit program; and the movement toward interlocking, short-term options. It is here that a well-developed delivery system can be most valuable. A system, such as the one that has been developed at BHCC, is capable of unlimited expansion and flexibility.

It is feasible, for example, to offer a two-year degree program in accounting, but no short-term sequences in bookkeeping; we offer a two-year degree program in Criminal Justice, but no three-month training for security guards; we offer a two-year degree program in Hotel/Motel Management, but no training program for desk clerks, or travel agents; a two-year degree program in Nursing, but no short term training course for Nurses Aides, LPN's, or volunteer hospital service directors. It is also possible to design each two-year program so that students can take one or more of the courses in that program, and possibly combine that course or courses with other courses and receive a certificate which outlines the objectives met by each course. In this way a student can choose a single or multiple sequence of courses in order to achieve his *present* goal, while building access to *future* goals. Another example; an Associate Degree program in Business Administration might provide the student who completes it with experience in marketing, accounting, and management. It might also prepare bookkeepers, newspaper advertising staff, public relations secretaries, club or volunteer social service workers, department store clerks, magazine vendors, etc. with the necessary job skills, yet without the completion of the degree program. Each set of "carcers" would be composed of a course, or sequence of courses from the Business Administration degree program, plus additional courses from other "degree" programs in the college. A hospital volunteer director might take a management principles course, a course in medical terminology, a third course in human relations. The end result would be a certificate in Hospital Volunteer Management, specifying the courses and the number of credits or competencies achieved. The volunteer director might later want to seek more education for an alternate career, such as a Nursing Home Activities Director. At that time, she would return to the college for courses in human growth and development, gerontology, recreation, and geriatrics nursing. This student still would not have achieved the traditional sixty hours for an Associate Degree, but would have the necessary skills to perform a defined task and might be awarded a second certificate, listing courses and credits. This person might stop at this point, or possibly return a few years later to learn new skills or techniques to aid her in her present job, or seek additional skills for a future job. In this manner, a combination of experiences, coupled together with skills and knowledge learned through college courses would provide easy access to a variety of careers — the level of such careers to be dependent upon the desires and capabilities of the individual student. The instructors for the courses might be part of the present faculty or might be part-time faculty hired from the industry or career area in which the student would like to be hired. The key is the delivery system.

This Tenore model for curricula development would provide the following benefits to educational administrators:

1. Ability to start up *and* shut down certificate programs within two to four months.
2. Access to presently employed people who need short-term skill or knowledge development.
3. Flexibility to train unemployed in six-week to six-month units.
4. An increase in enrollment through part-time study.
5. An interlocking and systems controlled degree program with multiple placement possibilities in an almost infinite number of careers based upon varieties of course sequences available at individual colleges and the compiling of these courses in terms of objectives to be met for employment.
6. Decreasing faculty costs as many instructors hired to teach in the interlocking curriculum would have experience and be

presently working in their area of expertise and thus would be hired on a part-time basis.

Based upon the present series of courses, meetings with business leaders in a variety of industries should establish clear-cut sequences of courses for specific occupations in the career ladder. Each sequence would have an appropriate certificate attached to it. A combination of certificates would equal a degree.

The politics of getting state-level administrators to accept this new direction would require few changes. An expansion of the Tenore Plan would require few changes. Approval would only need to be granted for new Associate Degree programs.

Redesigning existing curricula could be an overwhelming task, but an interlocking course structure between disciplines and departments using a systemized delivery system would lead to a more responsive community college which truly trains its students for multiple positions in a variety of fields.

The "Nuts and Bolts" Workshop

Twice a year for the past four years the Division of Continuing Education has offered a three day workshop to train other educators in the principles and applications behind the Tenore Plan.

The workshop is designed to consist of an in-depth explanation of the theoretical basis of the educational systems design approach and its relationship with learning theory; develop familiarity to the selection process of existent commercially produced materials including resources and bibliographies; develop implementation procedures for materials; identify the various set-ups of other delivery systems with emphasis on the BHCC model; and explain the role of the teacher as subject matter expert, prescriber, facilitator, and evaluator. It is offered to faculty and administrators in all disciplines at all levels. To date over six hundred fifty professionals from all over the continental United States, Canada, Hawaii, Europe, and the Near East have participated. The responses have been far reaching and have done a great deal to extend the philosophy of the College to many other educational systems. A favorable result has been continuous invitations to repeat the workshop on other campuses across the United States.

The workshop is managed by objectives. There are twelve. When the workshop is over the participant should be able to:

on a theoretical basis

1. state the five steps in the development of validated instructional materials.
2. state one example of a cognitive learning map.
3. state at least three sources of more information on individualized instruction.
4. describe cognitive, affective, and psychomotor domains.
5. describe Dale's Cone of Experience and how it relates to the cognitive and affective domains.
6. state five principles of learning.
7. describe the mastery model of learning.

on the selection process

8. search for commercially prepared materials using appropriate bibliographies.
9. evaluate commercially available programs.

on implementation

10. describe the implementation of commercially prepared materials.

on delivery systems

11. describe at least two situations where individualized instruction is used in an educational setting.

on the role of the teacher

12. describe the change in the role of the teacher as subject matter expert, prescriber, facilitator, evaluator.

The workshop begins with a definition of objectives and directions on how to write them and proceeds to the in-depth theory behind individualized instruction and a step-by-step process on the Systems approach to delivering this type of instruction as developed at Bunker Hill Community College by Elizabeth Tenore.

Participants get hands-on experience with both materials and exposure to a learning process by seeing the Center in operation.

Considerable time is spent on the importance of the Center-developed Learning-Style Profile. The profile has been experimentally in use for several years and is currently in the process of validation. For many, the workshop is a first hands-on experience with an entirely new approach to education. Although most participants are

administrators, many come from the basic classroom experience. For both there is often expressed an intense desire to bring back to their own schools a new system that will somehow make things work better for their own students.

Often a new-found knowledge is clouded by bureaucratic problems of conflicting philosophies coupled by lack of funding to expand new ideas into workable centers.

Nevertheless, once exposed to the methods of systemization, most participants are able to bring back to their institutions the small grains of knowledge that will eventually develop into new directions.

CHAPTER X

CONCLUSION

It was our intent in this book to present the historical and pragmatic development, as well as the procedures of the functioning Learning Center as it is now established at Bunker Hill Community College. Important in this presentation was the emphasis of the Learning Center as an individualized, personalized, instructional delivery system which is core to an integrated, interdisciplinary learning-teaching oriented model. We hoped to indicate the high level of educational accountability as well as the cost effectiveness of the operation. We also wanted to acknowledge both the prime sources of the model and those who have contributed to its success.

It is important to emphasize that the model is far from ideal! Equally important is that we have presented the model as it now is, not as we would like it to be. However, we are about to move into a new building at Bunker Hill Community College, to an area with five times the floor space which has been properly designed to house all the activities of the Learning Center with a concern for operational flow patterns. This new area will house the structured, monitored activities of the Center as we have described them and will incorporate a central dispensing station, expanded and properly furnished testing-room facilities, a large faculty turf with private work areas for those faculty who work with the Center concept, a large, open student work space furnished to facilitate multi-modal activities and tutoring functions, an area for the simulation course activities and faculty-student group activities to occur, an instructional design-implementation workroom and a conference-study room. We look forward to our move in Spring '79 and hope that these new quarters will allow us to move toward the ideal model.

However, we would be remiss not to indicate some of the problems that, in our opinion, exist and will tend to hinder not only the expansion of the existing model but also its spread—at least within the Massachusetts Community College system.

Perhaps the most important problem we faced as a new college in 1973-74 was an almost immediate freeze on various types of funding, especially in the area of raises for faculty and adminis-

tration. Only those people who received promotions during this period had corresponding salary increases. This situation persisted for approximately three years with the result that inequities were created within the system that are still with us, as well as demoralization, negativism and some instances of polarization which we feel resulted in pockets of confrontation stances in the unionization movement. In our own experiences, we observed some rather subtle "dropping out" that occurred which seemed to hinder the generation of creative approaches to the educational process. This, coupled with inadequate staffing, lack of funds for materials and equipment, equally hindered the development of methods and resources for a student population badly in need of new approaches in their academic experience. With 1979 and a new Governor in Massachusetts, we will wait to see what happens to funding for the system.

We would be equally remiss if we did not indicate some hopes for our future activities even if, at present, they represent fantasies. We certainly hope to design more integrated, interdisciplinary course packages since these will give us a range of learning activities that will allow us to meet the diverse needs of our student population. In addition, this approach will help us to eliminate the intense fragmentation usually present in educational resources. We hope to validate our self-perceptional preferred learning style inventory and to incorporate its use into the basic college procedures, especially in the areas of academic counseling, faculty advising, and course selection. At the same time, we hope to incorporate procedures for expanding the active elements in each student's learning style into the curricula so that the student can be more effective in all learning situations. We hope to be involved in institutional research that will begin to examine some of the material-methods questions and also address such areas as attrition, grade inflation, and the like.

Presently, we have been exploring the works of Drs. Robert Ornstein and Joseph Bogen concerning "split-brain" research for the educational implications of the left-right brain functions concept. (Ornstein is presently Associate Professor of Medical Psychology at the Langley Porter Neuropsychiatric Institute, University of California at San Francisco while Bogen is Senior Neurosurgeon of the Ross-Loos Medical Group and Associate Clinical Professor of Neurosurgery at the University of Southern California School of Medicine). We have systematically begun to use materials and methods designed to train the "academic" left brain through right brain functions in Dunbar's communications courses, Tenore's psychology course, and the Learning Center's reading development course. Given more staffing and a larger budget, these are small beginnings which we hope will take us *one step beyond* in our adventures into learning and teaching.

SELECTED REFERENCES

Altschuler, J. 1971. *Teaching Achievement Motivation*. Educational Ventures, Inc., New York, New York.

Bainton, R.H. 1962. *Here I Stand: A Life of Martin Luther*. Mentor Books, Chicago, Illinois.

Benathy, N.H. 1968. *Instructional Systems*. Fearon Publishers, Belmont, California.

Bloom, B.S. 1956. *Taxonomy of Educational Objectives I: The Cognitive Domain*. David McKay Company, Inc., New York, New York.

1968. *Learning for Mastery*. Evaluation Comment, Center for the Study and Evaluation of Instructional Programs, Los Angeles, California.

1970. *Time and Learning*. American Psychologist, September Edition.

Bloom, B.S., Hastings, T., and G. Madaus. 1971. *Handbook on Formative and Summative Evaluation of Student Learning*. McGraw-Hill Book Company, NewYork, New York.

Boring, E. 1968. *The History of Experimental Psychology*. Appleton-Century-Crofts, New York, New York.

Bruner, J.S. 1970. *The Process of Education*. Vintage Books, New York, New York.

Bugelski, B.R. 1971. *The Psychology of Learning Applied to Teaching*. Bobbs-Merrill Company, Inc., Indianapolis, Indiana.

Canfield, A.A. 1968. *Two Years on the Road*. The Experimental Junior College, Junior College Leadership Program, University of California at Los Angeles, Occasional Report Number 12.

Conant, J.B. 1961. *Man Thinking About Man*. The American Scholar, Autumn.

Cross, P.K. 1972. *Beyond the Open Door*. Jossey-Bass, Inc., San Francisco, California.

1976a. *Accent on Learning*. Jossey-Bass, Inc., San Francisco, California.

1976b. *Planning Non-Traditional Programs*. Jossey-Bass, Inc., San Francisco, California.

Cross, P.K., et al. 1974. *Planning for Non-Traditional Programs: An Analysis of the Issues*. Jossey-Bass, Inc., San Francisco, California.

Crowe, A.L., and I.L. Kandell. 1964. *Vital Issues in American Education*. Bantam Books, New York, New York.

Dale, E. 1969. *Audio-Visual Methods in Teaching*. Holt, Rinehart, and Winston, New York, New York.

Davies, I.K. 1971. *Competency Based Learning: Technology, Management, and Design*. McGraw-Hill Book Company, New York, New York.

Dewey, J. 1959. *Dewey on Education: Selections*. Teachers College Press, New York, New York.

1973. *Experience and Education*. The Kappa Delta Pi Lecture Series, Collier Books, New York, New York.

Dolan, J.P. 1964. *The Essential Erasmus*. Mentor-Omega Publishers, New York, New York.

Easton, S.C. 1962. *History of the Western World*. Barnes and Noble, New York, New York.

Education Commission of the States (Director of Research). 1976. *Directory of Measurable Objectives Sources*. Denver, Colorado.

Eisenberg, L. 1964. *Strengths of the Inner City Child*. Baltimore Bulletin of Education, Volume 41.

Erasmus, D. 1941. *Praise of Folly*. (translated by H.H. Hudson). Princeton University Press, Princeton, New Jersey.

Eurich, A.C. 1962. *Technology in Evaluation*. New Society, Volume II.

Fantini, M.D., and M.A. Young. 1970. *Designing Education for Tomorrow's Cities*. Holt, Rinehart, and Winston, New York, New York.

Fry, E. 1968. *The Readability Formula That Saves Time*. Journal of Reading, Volume II, Number 7.

Gagne, R. 1970. *The Conditions of Learning*. Holt, Rinehart, and Winston, New York, New York.

Gardner, J. 1961. *Excellence: Can We Be Equal and Excellent Too?* Harper-Colophon, New York, New York.

Guilford, J.P. 1954. *Three Faces of Intellect*. American Psychologist, Volume 14.

Harlacher, E.L., and J.F. Gollattscheck. (editiors). 1978. *Implementing Community-Based Education*. Jossey-Bass, Inc., San Francisco, California.

Harty, L., and B. Monroe. 1977. *Objectives for Instructional Programs*. Insgroup, Inc., Orange, California.

Hewett, F.M., and S.R. Foress. 1974. *Education of Exceptional Learners*. Allyn and Bacon, Inc., Boston, Massachusetts.

Highet, G. 1950. *The Art of Teaching*. Vintage Books, New York, New York.

1963. *Man's Unconquerable Mind*. Columbia University Press, New York, New York.

Hilgard, E., and G. Bower. 1975. *Theories of Learning*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Krathwohl, D. (editor). 1956. *Taxonomy of Educational Objectives II: The Affective Domain*. David McKay Company, Inc., New York, New York.

Leonard, G.B. 1968. *Education and Ecstasy*. Delacorte Press, New York, New York.

Mager, R.F. 1962. *Preparing Instructional Objectives*. Fearon Publishers, Belmont, California.

Markle, S. 1961. *A Programed Primer on Programing; Volume II, Practical Problems*. Institute for Educational Technology, Columbia University, New York, New York.

1973. *The Golden Oldies Issue*. Improving Human Performance Quarterly, Spring Edition.

1974 a. *The Learning Processes*. Tiemann Assosciates, Chicago, Illinois.

1974 b. *Good Frames and Bad: A Grammar of Frame Writing*. John Wiley and Sons, NewYork, New York.

Markle, S., and P.W. Tiemann. 1968. *Programing is a Process: An Introduction to Instructional Technology*. Office of Instructional Resources, University of Illinois at Chicago Circle, Chicago, Illinois.

McKeon, R. (editor). 1941. *Aristoteles*. Random House, New York, New York.

Montaigne, M. 1958. *Complete Essays*. (translated by D.M. Frome). Stanford University Press, Stanford, California.

Murray, D. 1968. *A Writer Teaches Writing*. Houghton Mifflin, Boston, Massachusetts.

Ornstein, R. 1972. *Psychology of Consciousness*. W.H. Freeman and Company, San Francisco, California.

Painter, F.V.N. 1905. *Great Pedagogical Essays*. American Books, Philadelphia, Pennsylvania.

Plato. 1941. *The Republic*. (translated by B. Jovett). The Modern Library, New York, New York.

Popham, N. and E. Baker. 1973. *A Viewers Guide to a Series of Filmstrip-Audio-Tape Programs*. VimCet Associates, Los Angeles, California.

Roueche, J., and B. Herrscher. 1973. *Toward Instructional Accountability: A Practical Guide to Educational Change*. Westinghouse Learning Press, Los Angeles, California.

Roueche, J., and W. Kirk. 1973. *Catching Up: Remedial Education.* Jossey-Bass, Inc., San Francisco, California.

Roueche, J., and J. Pitman. 1972. *A Modest Proposal: Students Can Learn.* Jossey-Bass, Inc., San Francisco, California.

Russell, J.D. 1974. *Modular Instruction.* Burgess Publishing Company, Minneapolis, Minnesota.

Sagan, C. 1977. *The Dragons of Eden.* Random House, New York, New York.

Simpson, E.J. 1966. *The Classification of Educational Objectives.* Psychomotor Domain, unpublished project report of the University of Illinois, Urbana, Illinois.

Skinner, B.F. 1968. *The Technology of Teaching.* Appleton-Century-Crofts, New York, New York.

1971. *Beyond Freedom and Dignity.* Alfred A. Knopf Company, New York, New York.

1974. *About Behaviorism.* Alfred A. Knopf Company, New York, New York.

Taylor, H.O. 1962. *Erasmus and Luther.* Collier Books, New York, New York.

Tenore, E.J. 1978. *Learning Center Report on* 1977 - 1978 *Mathematics Placement Testing.* Bunker Hill Community College, Charlestown, Massachusetts.

Thorndike, R.E. 1970. *Educational Measurement.* American Council on Education, Washington, D.C.

Ulich, R. 1954. *Three Thousand Years of Educational Thought.* Harvard University Press, Cambridge, Massachusetts.

Wager, W. 1975. *Media Selection in the Affective Domain: A Further Interpretation of Dale's Cone of Experience for Cognitive and Affective Learning.* Educational Technology, Volume 15 (July).

Wertheimer, M. 1971. *Productive Thinking.* Harper and Row, Inc., New York, New York.

Westinghouse Learning Corporation. 1975. *A Brief Description of Individualized Instruction.* Westinghouse Learning Corporation, New York, New York.

Westinghouse Learning Press. 1975. *Learning Objectives for Individualized Instruction.* Westinghouse Learning Press, Los Angeles, California.

Willingham, W.W. 1973. *The Source Book for Higher Education.* College Entrance Exam Board, New York, New York.

Woodward, W. 1956. *The Aims and Methods of Education.* Harper Press, Chicago, Illinois.

Yutang, L. (editor). 1938. *The Wisdom of Confucius.* Random House, New York, New York.

ERIC Clearinghouse for Junior Colleges
FEB 21 1992